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EVALUATION GROUP (NAVY) ORLANDO FL W R TERRELL DEC 82
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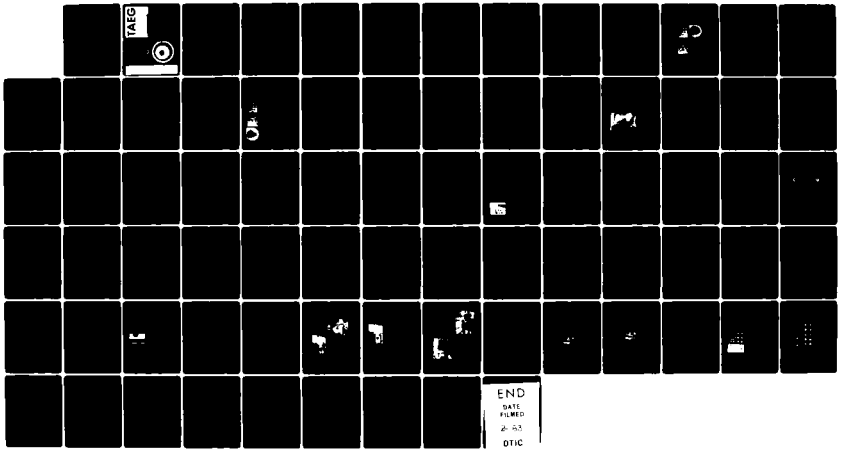

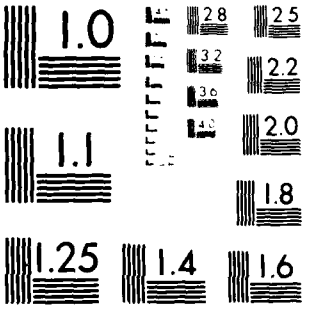

TAEG

TRAINING ANALYSIS AND EVALUATION GROUP

(12)

TECHNICAL REPORT 137

AD A124146

COMPUTER AUTOMATED PAGE LAYOUT (PLA) FOR TEXT-GRAPHIC MATERIALS: USER'S GUIDE

DECEMBER 1982

FOCUS ON THE TRAINED PERSON

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TRAINING ANALYSIS AND EVALUATION GROUP
ORLANDO, FLORIDA 32813

Technical Report 137

COMPUTER AUTOMATED PAGE LAYOUT (PLA) FOR TEXT-GRAPHIC MATERIALS: USER'S GUIDE

William Terrell

Training Analysis and Evaluation Group

December 1982

Sponsored by

Chief of Naval Education and Training

and the

David W. Taylor Naval Ship Research and Development Center
Naval Technical Information Presentation Program

Alfred F. Smode

ALFRED F. SMODE, Ph.D., Director
Training Analysis and Evaluation Group

W. L. Maloy

W. L. MALOY, Ed.D.
Deputy Chief of Naval Education and Training for Educational Development and Research and Development

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This user's guide describes computer routines called PLA for automating the layout of highly illustrated pages describing equipment operation and maintenance procedures. This guide enables the relatively inexperienced author to prepare job performance aids and portions of procedure training aids. It describes how to (1) document procedures to be presented, (2) prepare data for use with PLA, and (3) run the PLA routines.

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ACKNOWLEDGMENT

Many people have contributed to the development of the page layout (PLA) routines and to this guide for using these routines.

The initial version of a computer program to solve the text-graphic page layout problem was developed under TAEG sponsorship by Dr. A. J. G. Babu and Cheickna Sylla of the State University of New York at Buffalo. TAEG began a second generation of this program that included for the first time the automatic printing of the formatted pages. Alan George of the University of Central Florida prepared this program. Subsequent revisions were made by M. Stephen Solomon, also of the University of Central Florida. Dr. William Terrell of TAEG prepared this guide on how to use the page layout routines.

Several TAEG personnel provided support to this project. Dr. Richard Braby, team leader for the computer aided authoring projects in TAEG, conceived the project and supported it. Mr. Charles Guitard ensured that the computer routines met TAEG software standards. Dr. M. Michael Zajkowski made valuable suggestions on the technical content and style of the presentation.

Appreciation is extended to LCDR Richard E. Ewell, Helicopter Antisubmarine Squadron One, who used an early version of the user's guide and provided recommendations for making it a more useful aid to authors.

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SECTION I

INTRODUCTION

The combination of increasing complexity of military equipment and a decreasing manpower pool with questionable quality of entering military personnel and rapid turnover presents a paradox: longer training pipelines and shortfalls in trainee capability Admiral Isaac Kidd, USN Retired, Chairman of the Defense Science Board Summer Study on Training and Training Technology[1] stated, "It is clear that the training task is harder than it ever has been. It may well not need to get harder if we smarten up. Modern technology may offer some substantial increases in training efficiency that could save scarce time for training and dramatically improve force effectiveness."

One avenue towards increases in training efficiency is the use of computers to construct curriculum materials. Specifically indicated is the expanded use of text-graphic instructional materials to describe how to operate and maintain military equipment (see appendix A).

While text-graphics materials have proven successful both as learning aids and job performance aids, they are expensive to develop. The high cost has restricted the use of these materials to research projects and to a few well supported programs. The high cost of text-graphic materials is due in part to the labor intensive work of creating the graphic art and in composing complex pages of illustrations and text. To reduce the cost of producing text-graphic materials, computer routines are being developed to generate illustrations and to automate page composition. The present report is a contribution to this effort.

PURPOSE

This report is a user's guide for the computer automated Page Layout (PLA) of text-graphic materials. Specifically, this guide is designed to aid the user in:

- documenting the procedures to be trained
- preparing format data for use with PLA routines
- employing PLA to layout text-graphic pages.

TAEG INITIATIVES

PLA was developed to support the production of Procedure Training Aids (PTA). The PTA is one of five learning aid formats developed to teach five common types of learning tasks in Navy training.[2] Both PLA and the learning aid formats were developed under the sponsorship of the Naval Technical

[1]Defense Science Board, Summer Study, Training and Training Technology, August 1982.

[2]R. Braby, C. J. Brown, and A. F. Smode. Handbook of Format Models for Designers of Technical Training Materials. TAEG Report No. 129, 1982. Training Analysis and Evaluation Group, Orlando, FL 32813

Information Presentation Program (NTIPP) at the David W. Taylor Naval Ship Research and Development Center. NTIPP is a major effort by the Navy to use current technology in the publication of training materials and technical manuals for operating and maintaining military equipment. The Chief of Naval Education and Training (CNET) tasked TAEG to support the NTIPP effort since the technical manuals and training materials will be employed in CNET-managed "C" schools.

OVERVIEW OF THE USER'S GUIDE TO PLA

In addition to this introduction, this guide contains two sections and four appendices. Section II describes the processes involved in preparing data for use in PLA. These processes include how to: (1) describe the steps in the procedures to be taught, (2) organize the description of the procedure into information pages which meet the requirements of the procedure training aid format, and (3) prepare worksheets with picture dimensions and picture-text relationships which will be entered into the computer routine as format data. Section III is a job performance aid on how to actually enter the format data into the PLA routine.

Appendix A contains sample pages of the instructional material created using PLA. Appendix B is the format model for designing procedure training aids. Error messages for the PLA system are listed in appendix C. A grid master to produce an overlay to compute picture dimensions and coordinates is contained in appendix D.

SECTION II

PREPARING FORMAT DATA FOR USE IN PAGE LAYOUT (PLA)

This section provides directions on how to:

- document procedures to be taught
- organize the document information into Procedure Training Aid page formats
- prepare worksheets to enter Procedure Training Aid format data into the Page Layout routine.

These activities performed in sequence are described in detail below.

DOCUMENT THE PROCEDURE

The first task is to collect and organize descriptions of each step in the procedure to be taught. Many procedures will have an official checklist which, while it will not provide much information about how to perform the procedure, will provide a sequence of the steps. Other procedures will not have a checklist and, thus, will have no formal organization other than that given by subject matter experts (SME) in the actual performance of the procedure. If a checklist does not exist, one must be created for the procedure. Document the performance of the procedure to be taught in the following manner:

1. Use the procedure checklist to organize the sequence of steps in the PTA.

2. Observe a SME actually perform the procedure. Describe in writing as clearly as possible each step in the procedure as performed by the SME. Photograph the entire piece of equipment and each portion that is used in the procedure.

3. Assemble a number of SMEs to review the photographs and written description of the procedure. Revise the description until the SMEs arrive at a concensus that the procedure is described as it should be taught.

4. Group the steps of the procedure into clusters that logically fit together. Large clusters (more than seven steps) should be divided into two or more smaller clusters.

5. Describe in as clear and brief language as possible the following:

   - operator actions performed in each step of the procedure
   - equipment responses (if any) to the action performed at each step
   - operator reactions to equipment responses as they occur.

6. Select pictures which illustrate each action and visual response in the performance of the procedure.

ORGANIZE THE DOCUMENTED INFORMATION INTO PTA PAGES

Utilization of the PTA format requires the preparation of four distinct types of pages: Information, Paraphrase, Road Map and Mock-up. All information taught in the PTA is introduced on Information Pages. Subsequently, Paraphrase Pages are used to provide self-checks on memory of that information. Road Map Pages provide prompted practice in the performance of the procedure through chaining drills called finger tracing exercises. Mock-up Pages provide unprompted practice in performance of the procedure requiring recall of the steps. The PLA routines are used in creating the Information Pages and the Paraphrase Pages which are variations of the Information Pages. The Road Map and Mock-up Pages are easily constructed by hand and are not supported by the PLA routines. See appendix B for a detailed description of these PTA format pages. The following steps describe the preparation of Information Pages. Each step is illustrated in figure 1.

1. Select the step(s) to be included on an Information Page. Limit the information on a page to as few steps as practical (rarely more than four).

2. Identify in the Header the cluster or checklist items and specific steps included on the Information Page.

3. Illustrate the steps with an overview picture of the equipment and close-up views of the portion of the equipment related to the steps described on that page.

4. Illustrate observable equipment responses to each action whenever the responses are essential cues for performing the procedure.

5. Describe the action for each step and enclose it in a box called an action label. Each label should be numbered in the sequence in which the action occurs in the procedure. An arrow should point to the location on the close-up illustration where the action takes place.

6. Describe responses that result from actions in separate response labels adjacent to the action label or include them in the action label.

7. Underline key words or numbers that must be remembered while performing the procedure.

8. Include directions to the learner in a Footer statement at the bottom of each page.

WRITING STYLE

Writing style is critical to the success of a PTA. Authors should ensure that the writing is clear and understandable. For that reason they should use active voice rather than passive voice when preparing label text.

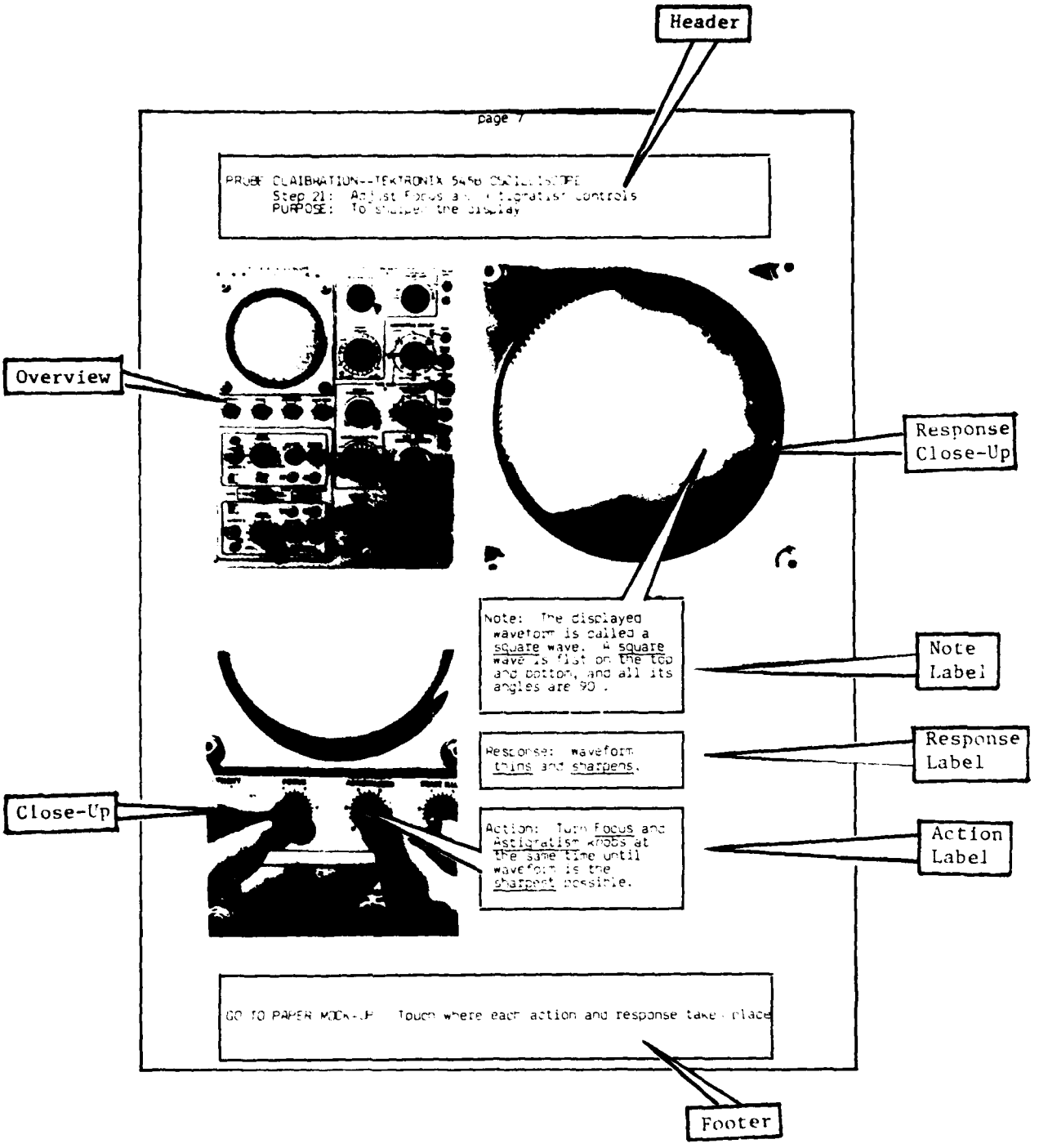


Figure 1 Information Page

An illustration of the differences between the voice and passive voice is shown below. Active voice tends to be terse and encourages readers to perceive themselves performing the actions. Passive voice tends to be wordy and obscures the intended action.

PASSIVE VOICE	ACTIVE VOICE
The Vertical Gyro switch must be set to the port position. The Port position for the Vertical Gyro switch is in the UP direction.	Set Vertical Gyro Switch to Port (up).
The four Hardover switches should be checked to determine whether they are in the OFF position. Also, the covers for the Hardover switches must be returned to the down position after the check is completed.	Check 4 Hardover switches OFF (covers down).

Authors preparing data for entry as input for the PLA program will find it convenient to use worksheets. These worksheets are written records of the contents of a page as well as a set of notes to aid in the data entry process. Also, using worksheets will make it easier to edit and revise PLA Page Data and to create the paste-up of camera-ready pages.

JOB PERFORMANCE AID FOR PREPARING WORKSHEETS

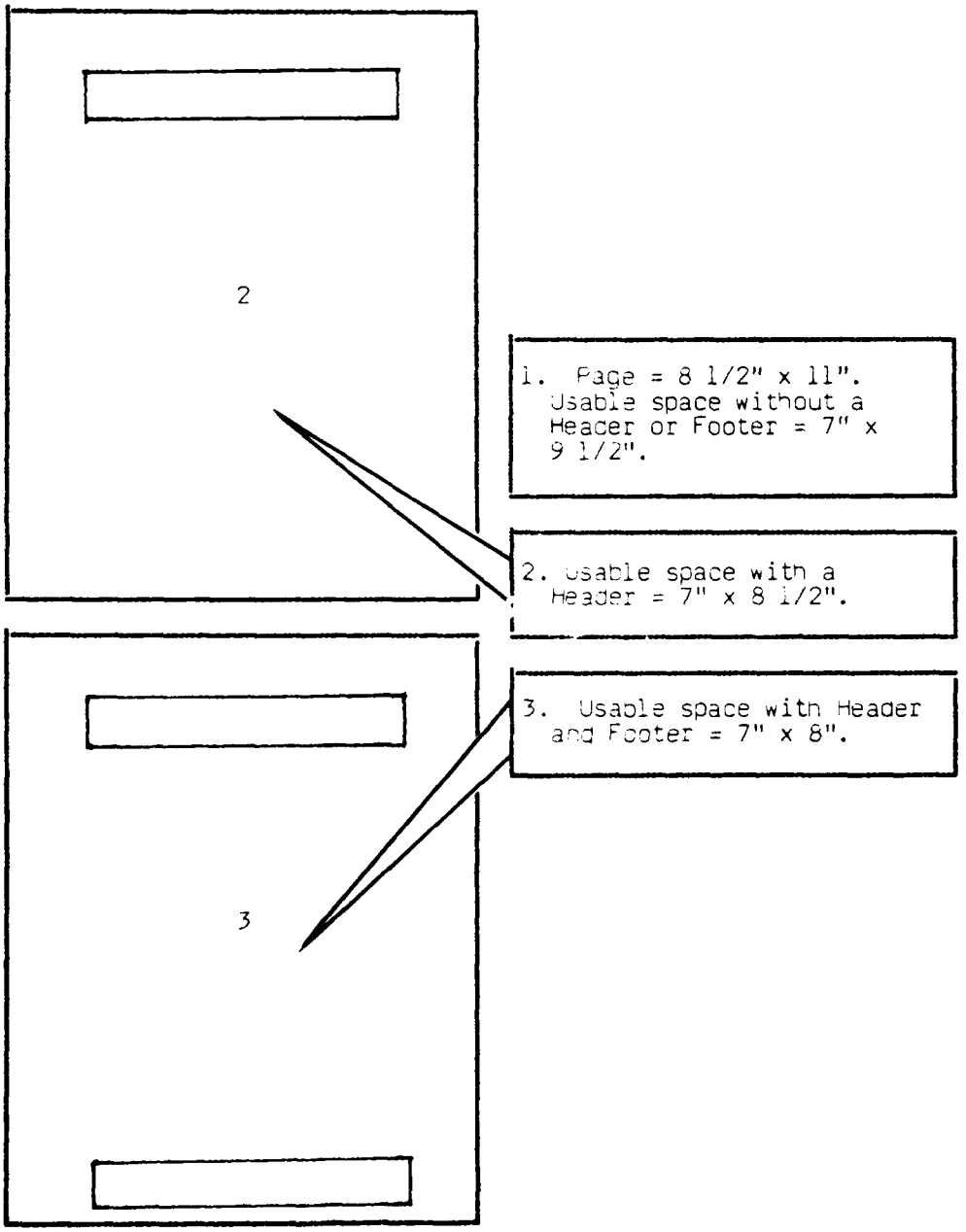
This subsection provides guidance in preparing worksheets which will be used to enter data into the PLA program. This material should be used in the following manner: (1) check the header to identify the specific procedure addressed on the page, (2) read label number one and any adjacent notes, (3) identify where the action occurs in the illustration, and (4) perform the action required, if any, and go on to the next numbered label. The procedures for preparing worksheets include the following:

- dimensions of usable space on a page
- contents of Header and Footer
- selecting and numbering pictures
- label text and number sequence
- picture and label relationships.

These procedures are included in the following seven pages. Completion of this process for all steps to be included in the PTA will result in a complete set of worksheets for generating the Information Pages. Section III provides directions for entering the information and notes from the worksheets into the PLA program.

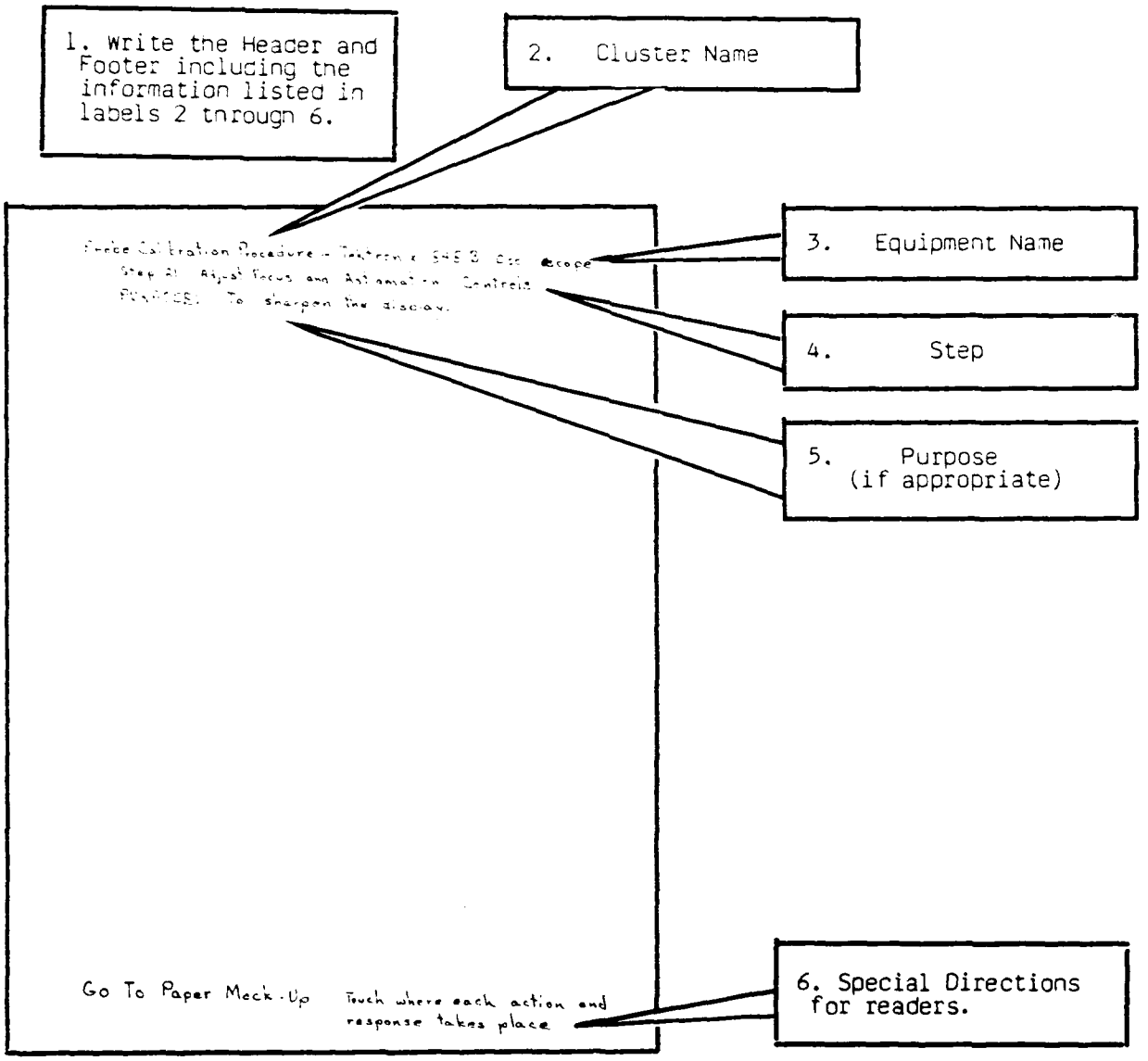
PLA: DATA PREPARATION--WORKSHEETS

Page Dimensions



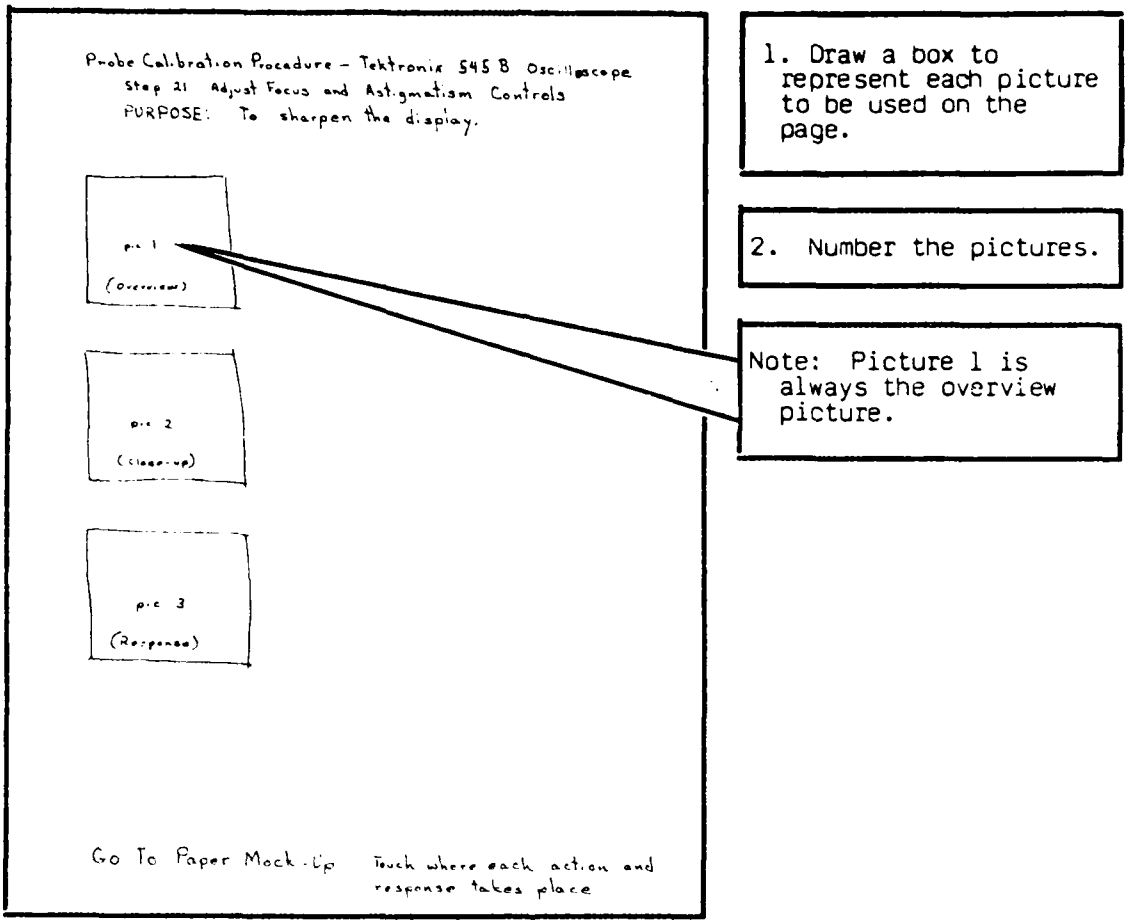
PLA: DATA PREPARATION--WORKSHEETS

Header and Footer



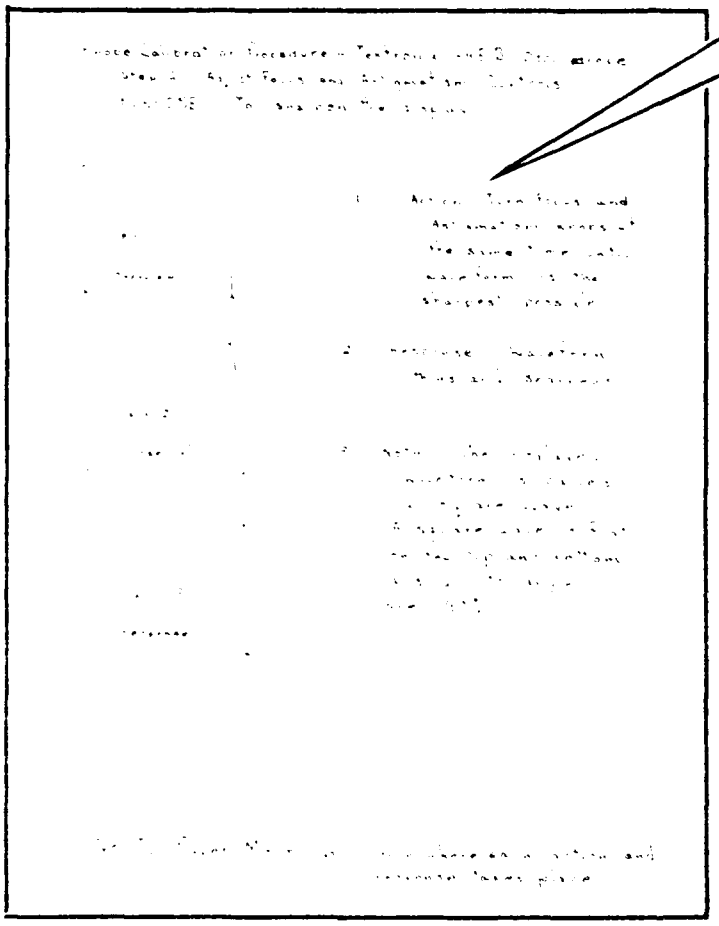
PLA: DATA PREPARATION--WORKSHEETS

Pictures



PLA: DATA PREPARATION--WORKSHEETS

Labels



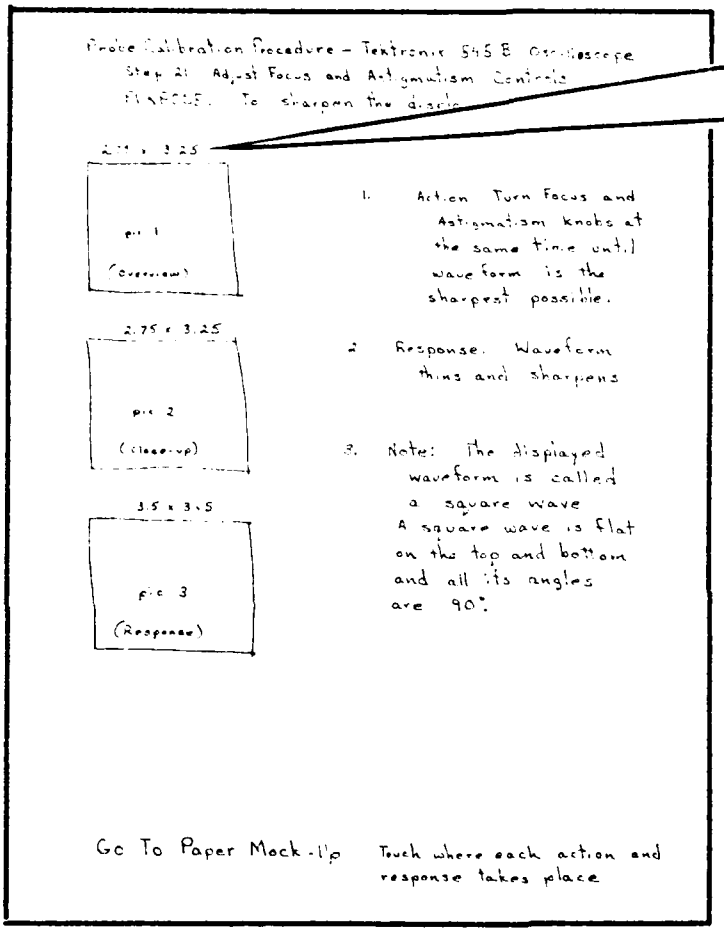
1. write the label text.

2. Number the labels in the order you wish them to appear.

Note: Layouts with 1 and 2 pictures may have up to 8 labels. Layouts with 3,4, and 5 pictures may have up to 4 labels.

PLA: DATA PREPARATION--WORKSHEETS

Picture Dimensions



1. Record the picture dimensions on top of the pictures.

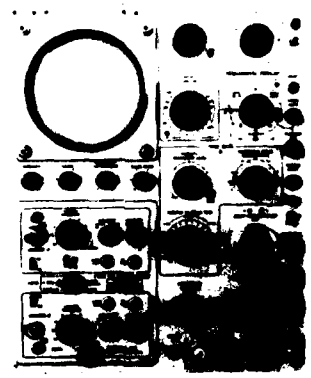
Note: Picture dimensions are entered as decimals rather than fractions.

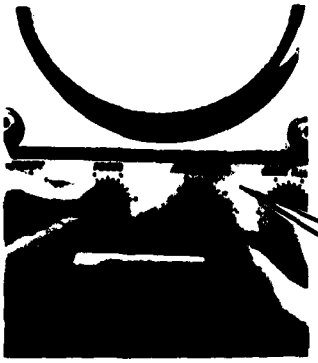
Note: The first number in picture dimension is width, the second number is height.

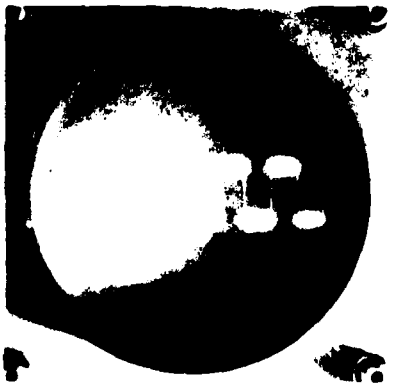
Note: A Picture Coordinates Grid is provided in Appendix D. The Grid is intended to aid the author calculate the dimensions and coordinates of pictures.

PLA: DATA PREPARATION--WORKSHEETS

Picture and Label Relationships







1. Determine the coordinates of the points in the pictures at which arrows from the close-up pictures and labels will terminate.

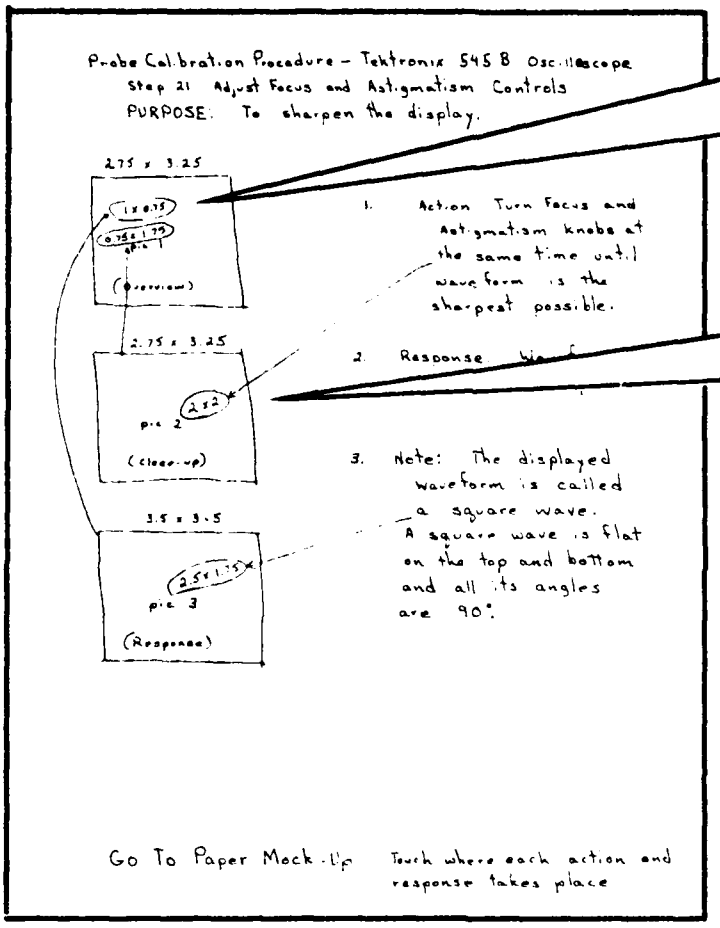
Example: The coordinates for picture 2 are 1" in from the left side and 0.75" down from the top of the overview picture.

Note: Coordinates are always measured from the upper left corner of the picture.

Note: Labels can not be attached to Picture 1 except in a one picture layout.

PLA: DATA PREPARATION--WORKSHEETS

Picture and Label Relationships



1. Record the coordinates and circle them so that they are not confused with the dimensions.

2. Draw arrows to connect pictures and labels with their circled coordinates.

Note: Some labels and pictures will not be connected to others, thus, will not have coordinates.

After all worksheets are completed, enter the data as input for the PLA program.

SECTION III

A JOB PERFORMANCE AID FOR CONSTRUCTING PAGES WITH PAGE LAYOUT

This section contains detailed instructions for creating Information Pages using the PLA program. The section is self-contained and may be used separately from the remainder of the report. There are two page numbering systems in section III. Numbers at the top of the page refer exclusively to the Job Performance Aid. Numbers at the bottom of the page relate to page position in the present report.

This JPA contains detailed instructions for creating an Information Page using PLA. These instructions include how to: access the PLA program on the computer, create and edit PLA files, and generate, display, and print page layouts.

A description of equipment requirements and a brief overview of the program segments within PLA are presented first. The remainder of the section is a Job Performance Aid on how to use PLA. The reader should note that the PLA program was used to lay out the instructional pages of this section.

Learning the PLA procedure will be facilitated if each step is performed on a computer terminal. Also, performance of the procedures requires at least one completed worksheet for data entry. Read the equipment requirements and the program overview and then follow the directions for Accessing the Page Layout Algorithm File. The illustrations in this JPA are computer print-outs of PLA displays generated as the JPA was developed. The content of these displays may be confused with the labels, therefore, the illustrations are denoted by a gray tone. The JPA should be used in the following manner: (1) check the header to identify the program segment and specific procedure addressed on the page, (2) read label number one and adjacent notes, (3) identify where the action occurs in the illustrations, and (4) perform the action required, if any, and go on to the next numbered label.

EQUIPMENT REQUIREMENTS

The PLA program was developed for use on a WANG 2200 VP or MVP system and is presently available only in WANG BASIC programming language.[3]

Equipment required to utilize PLA at the present time include:

Terminal - WANG 2116A CRT, or
WANG 2236D CRT -- Graphics Capability

Disk - WANG Hard Disk, or
- WANG 2270A Diskette Drive

Printer - WANG 2281 Daisy Wheel Printer

Authors using WANG 2270A diskette drives will need two of the drives to operate the PLA programs. The diskette containing the PLA programs must be inserted into the first diskette drive. The second diskette which is to contain the project files and work spaces will be inserted into the second diskette drive.

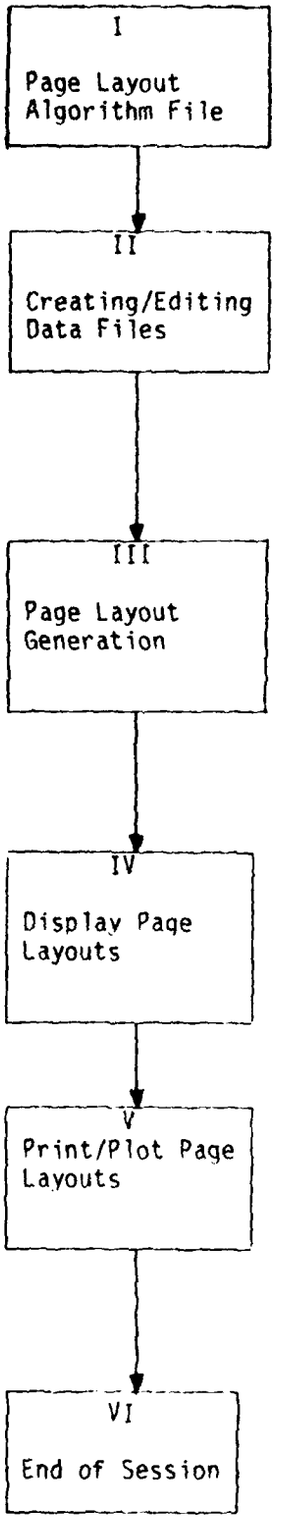
Federal agencies can obtain the PLA software by sending a written request along with one WANG 2270A flexible disk to the Training Analysis and Evaluation Group, Naval Training Center, Orlando, FL 32813.

[3]It is expected that some PLA users will convert the programs into languages compatible with other computer systems.

PLA OVERVIEW

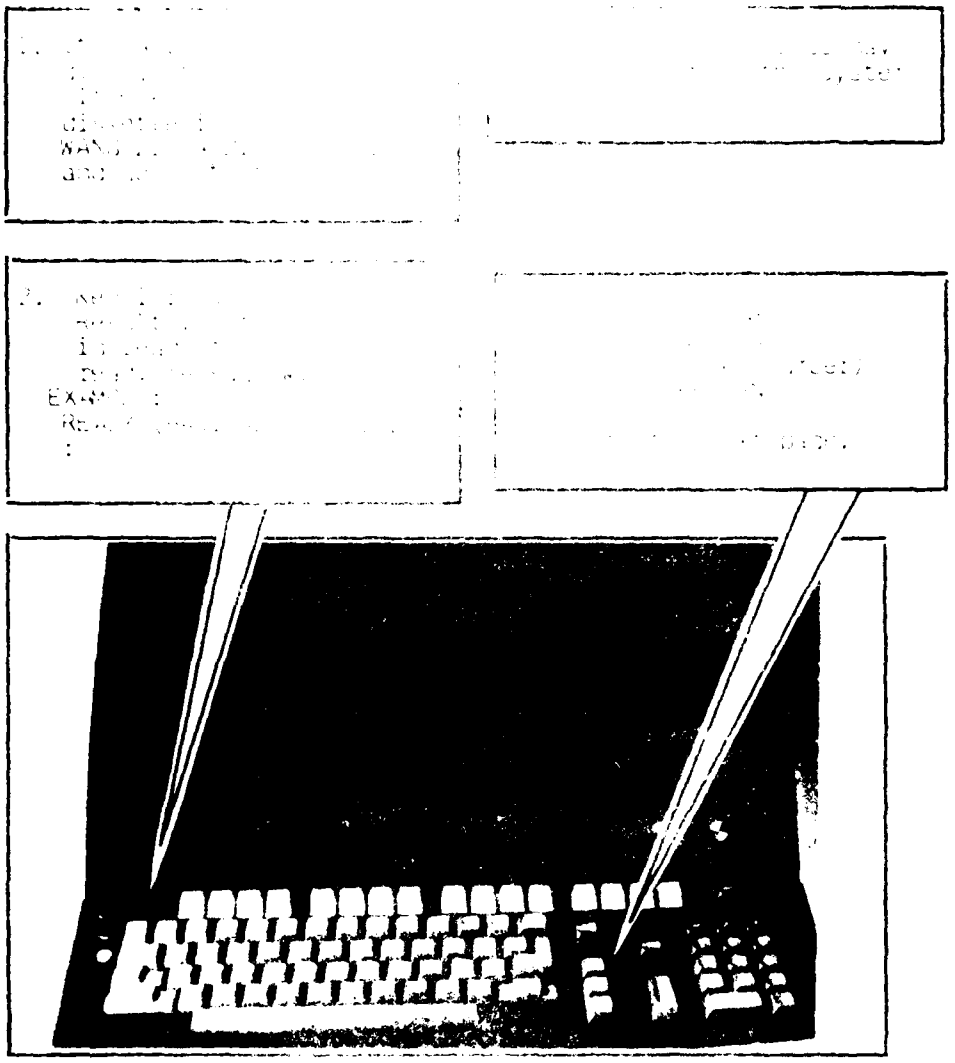
Figure 2 contains an outline of the six segments of the PLA operations. The outline includes a brief description of each segment intended to assist the reader in establishing the relationships of the various operations of PLA.

The remainder of this section is a job performance aid, designed to instruct the reader in the step-by-step use of PLA.



I Page Layout Algorithm File	Segment I describes loading the disk, retrieving the PLA program, correcting system addresses (terminal, disk, printer), and entering the USER ID and Password.	page 1 to 7
II Creating/Editing Data Files	Segment II describes the retrieval and editing of existing files and the creation of new files within the Project, Book, and Page file catalogs. Also included is the creation and editing of Page Layout Data, e.g., Picture Dimensions, Picture-Label Relationships, and Header, Footer, and Label Text.	page 8 to 24
III Page Layout Generation	Segment III describes how Page Layouts are generated using the Page Layout Data created in segment II. Segment III provides a Computer Layout Data Printout and Error Statements to aid the author in the analysis of problems which prevent the generation of a Page Layout with the given Page Layout Data.	page 25 to 27
IV Display Page Layouts	Segment IV assists in the analysis of problems by providing a graphic terminal display of pages generated. This section is not very useful on computer terminals that do not have graphic capability.	page 28 to 29
V Print/Plot Page Layouts	Segment V describes all of the Print/Plot options. First is the choice of either printing an Information Page or a Paraphrase Page. Second is the choice of the conditions under which arrows are or are not printed. Third is whether to Print the Header and/or Footer boxes. The final choice is whether to print a camera-ready copy or a high speed copy for proofing.	page 30 to 35
VI End of Session	Segment VI is an end of session message which indicates the systems have been properly terminated.	page 36

Figure 2. Outline of the PLA Operations



...or statements are entered. ... not be pressed are indicated ...

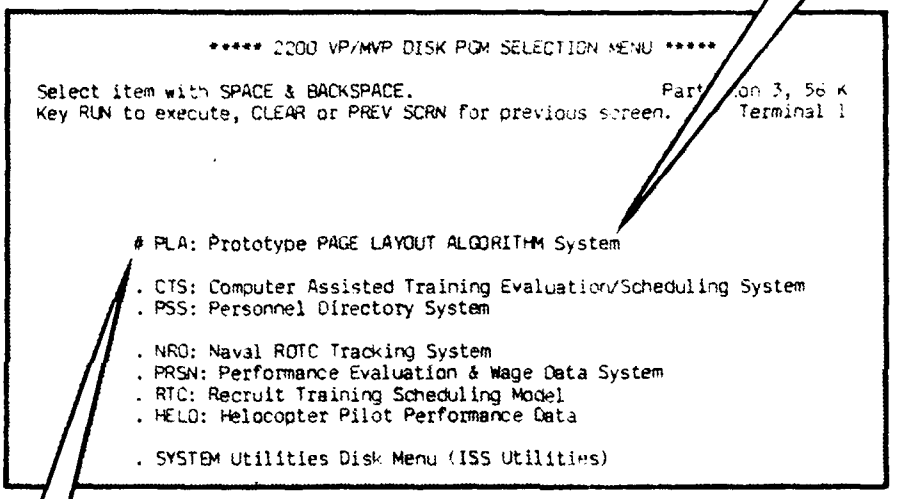
SEGMENT I: ACCESSING THE PAGE LAYOUT ALGORITHM FILE

Disk Menu

1. If PLA programs are stored on a Diskette go to page 3.

If PLA programs are stored on a hard disk go on to the next step.

2. If the PLA file is not included in the Menu display key in: CLEAR
(your disk number)
Results: New Menu Display



3. Move the Cursor to your file by keying the Spacebar (down) or Backspace (up).
Then key in: RUN
(NO RETURN)

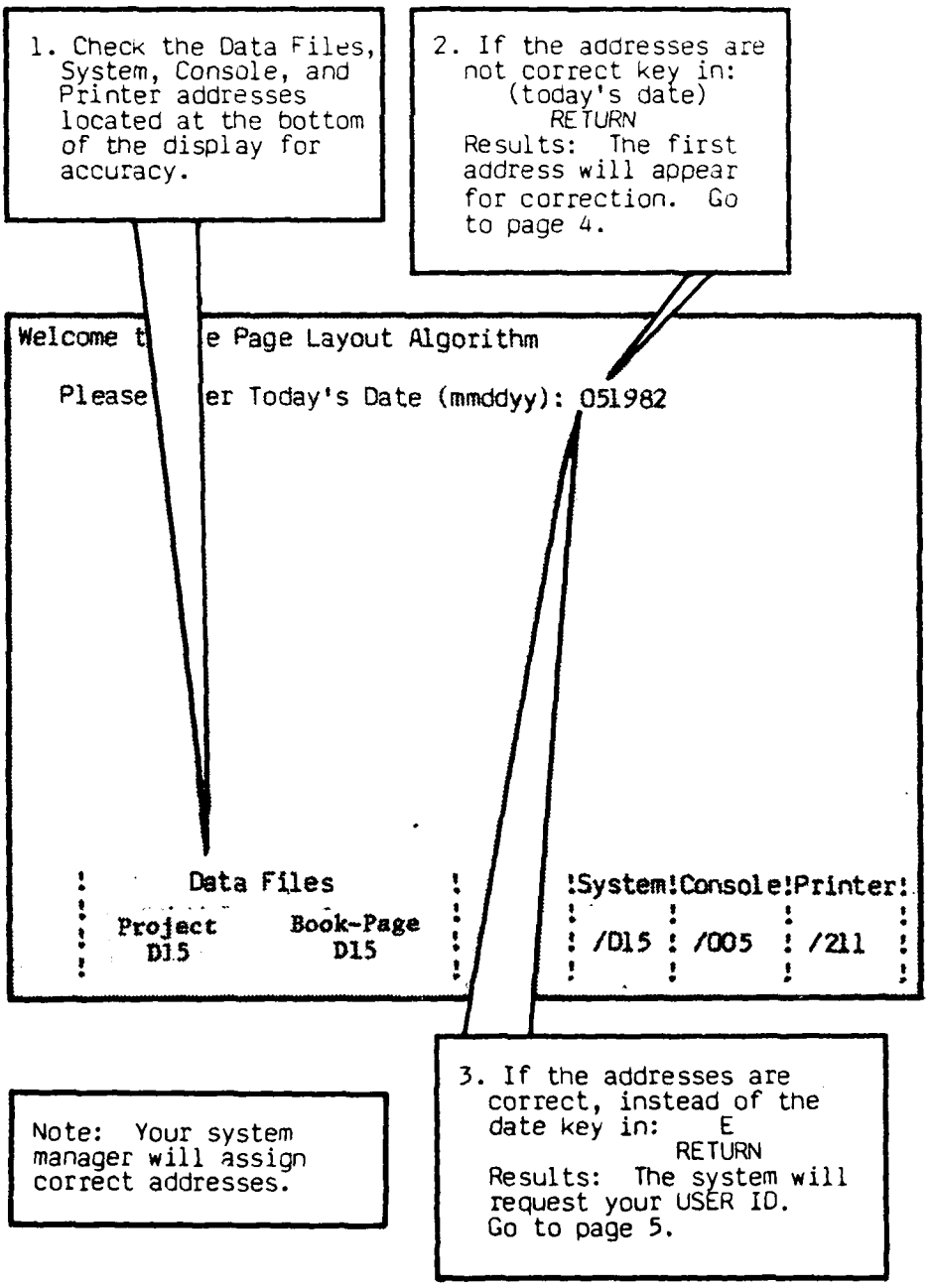
Results: The screen will read:
LOADING PLA.ADRS

Then the screen will read:
Welcome to page layout algorithm.

Go to page 3.

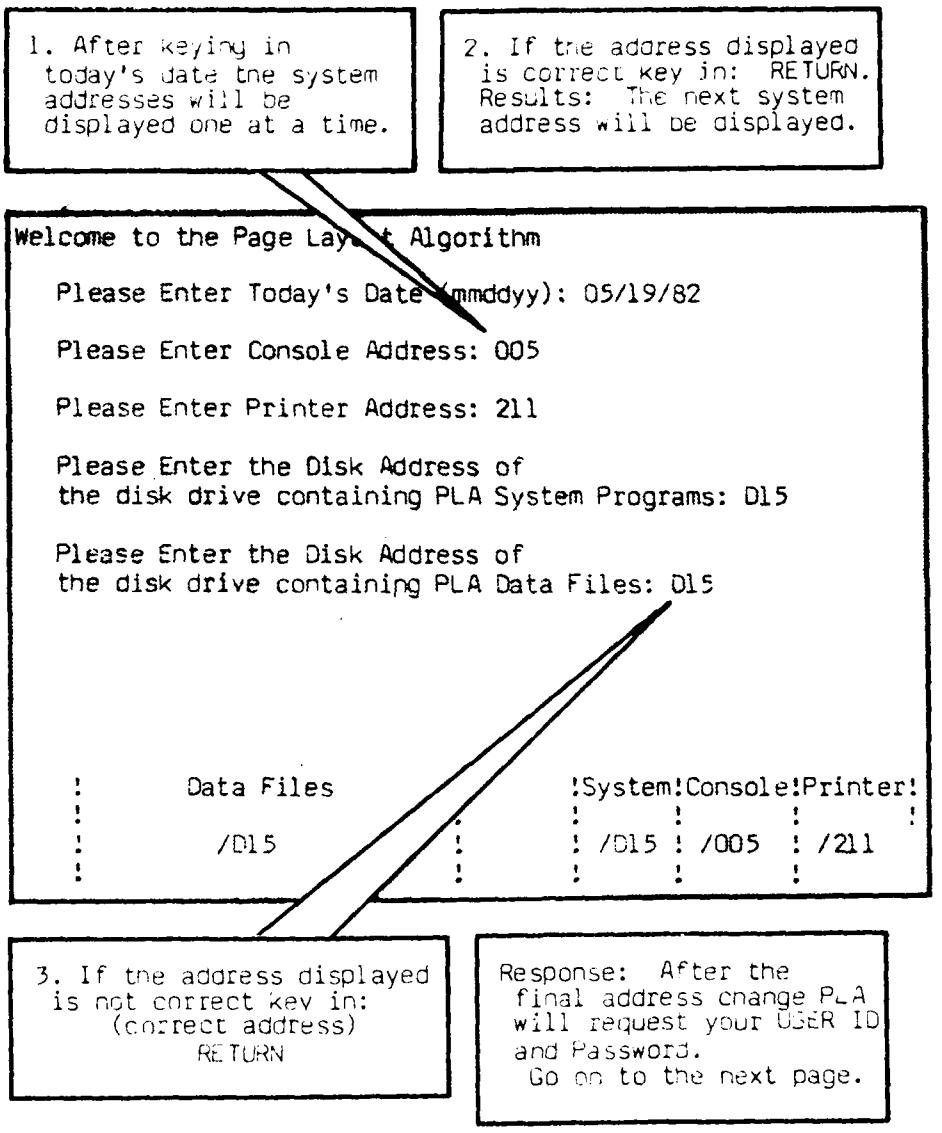
SEGMENT I: ACCESSING THE PAGE LAYOUT ALGORITHM FILE

System Addresses



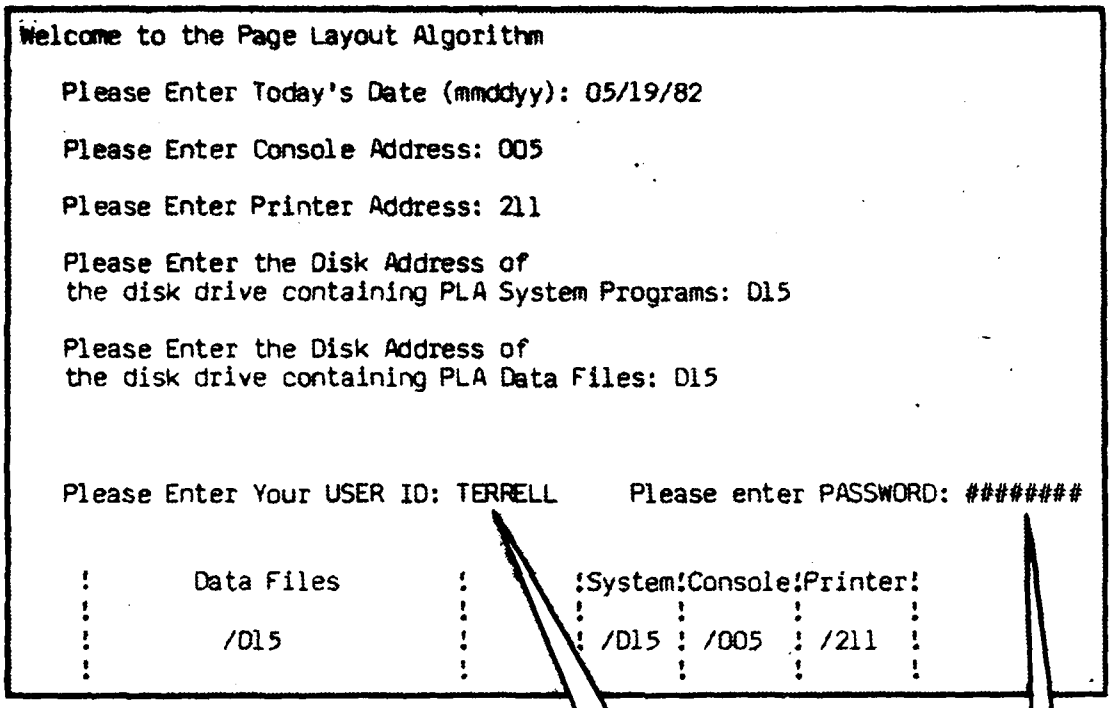
SEGMENT I. ACCESSING THE PAGE LAYOUT ALGORITHM FILE

System Addresses



SEGMENT I: ACCESSING THE PAGE LAYOUT ALGORITHM FILE

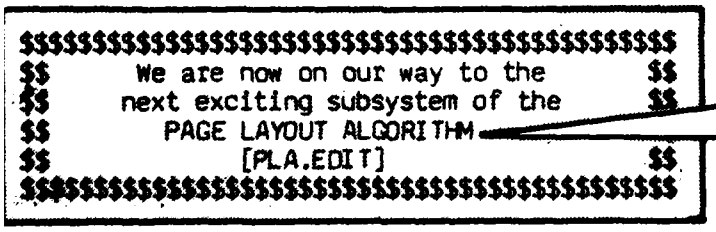
USER ID and Password



1. Key in:
   USER ID
   RETURN
   If the program will not accept your USER ID go to page 6.

Note: See your computer system manager for information about USER ID and PASSWORD.

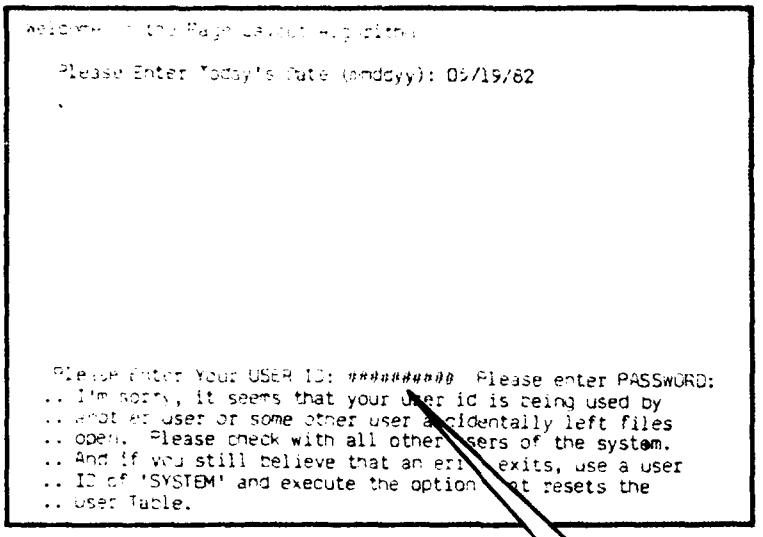
2. If the program accepts your USER ID key in: (Password) RETURN
   Go to page 7.

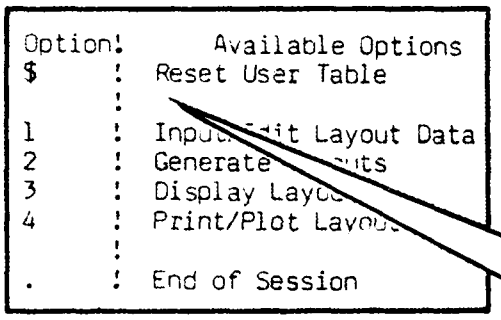


Note: This message will appear when PLA is moving to a different sub-system.

SEGMENT I: ACCESSING THE PAGE LAYOUT ALGORITHM FILE

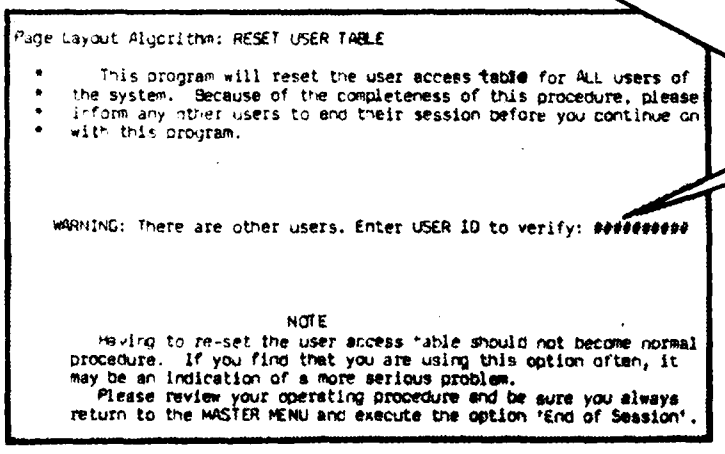
User ID Reset





1. If the program will not accept your USER ID key in:
   SYSTEM
   RETURN

2. When the Master Menu appears key in: $



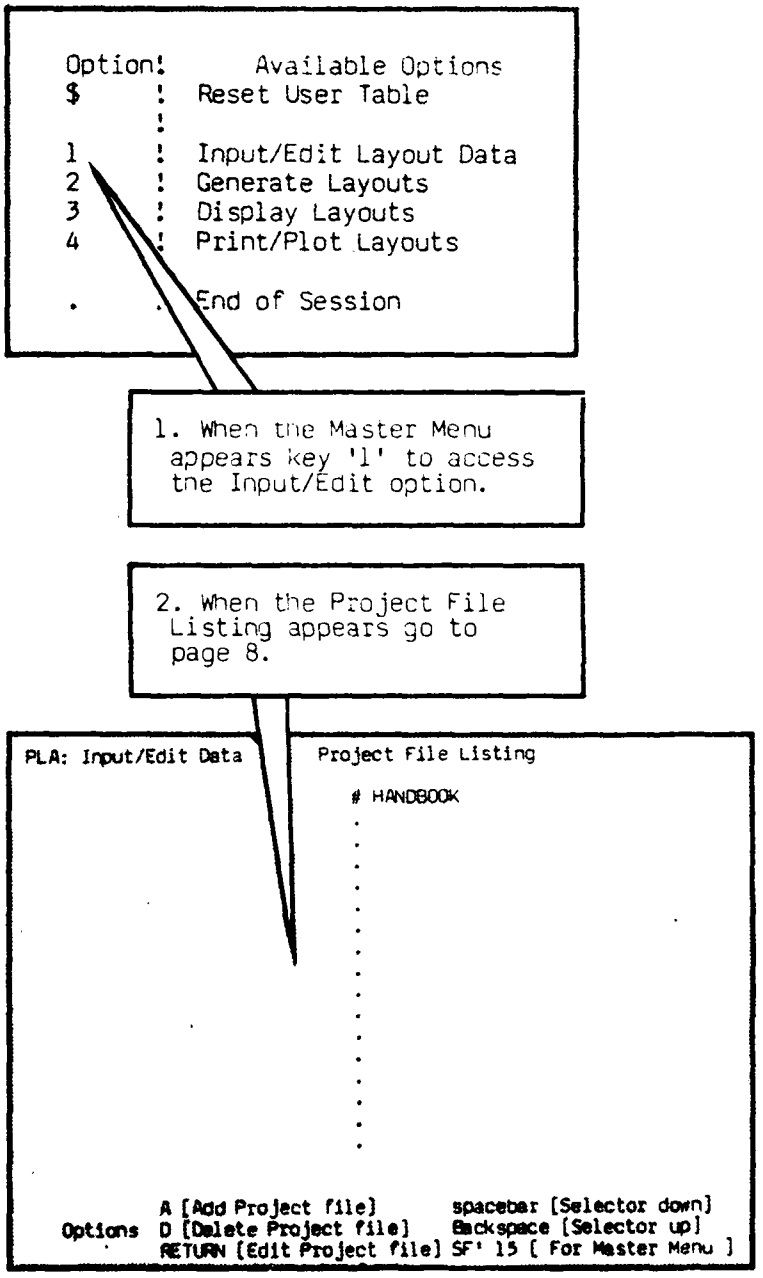
3. Then key in: SYSTEM

Results: The Master Menu will appear and the system will be cleared of open files.

Go to next page.

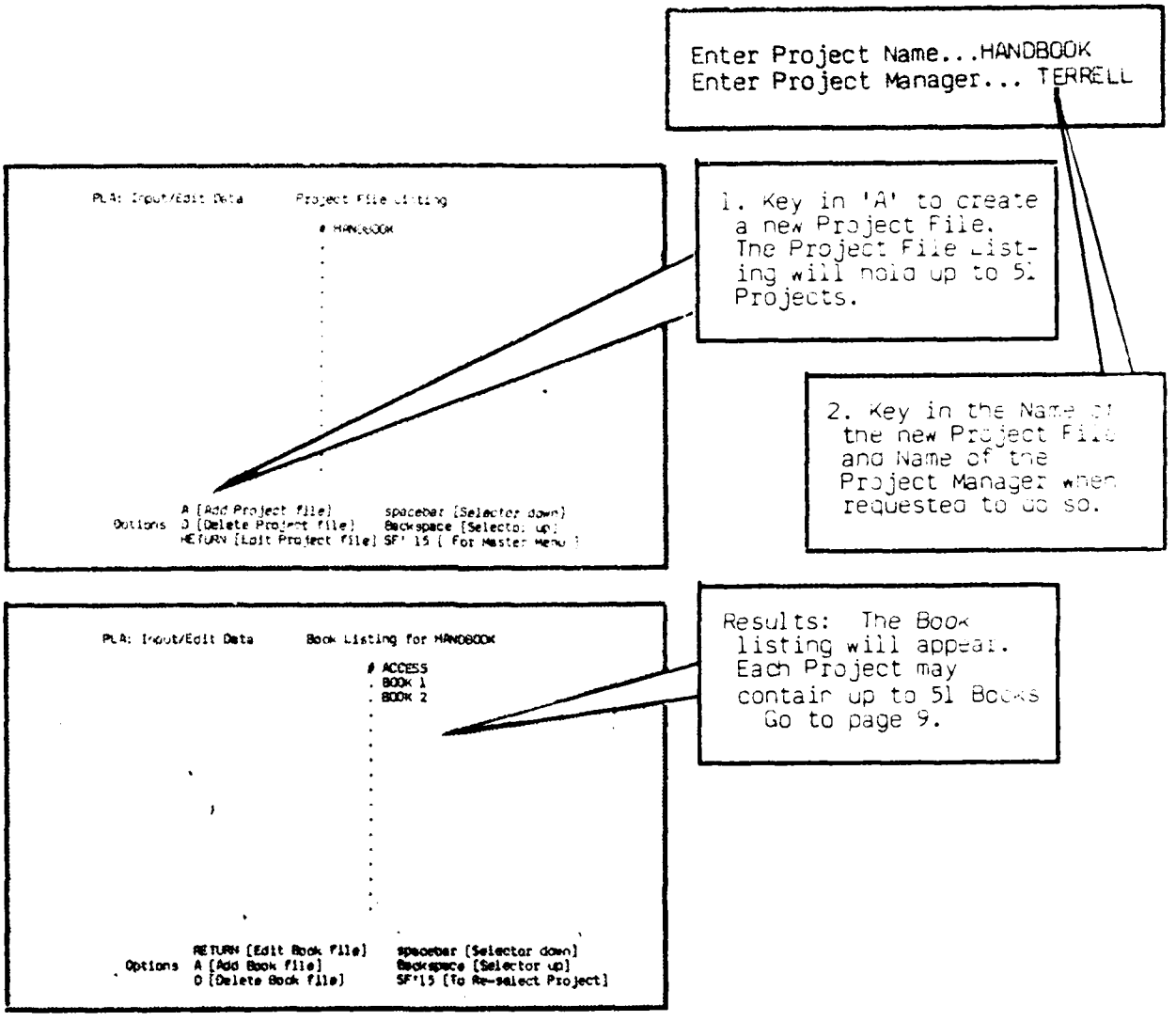
SEGMENT I: ACCESSING THE PAGE LAYOUT ALGORITHM FILE

Master Menu



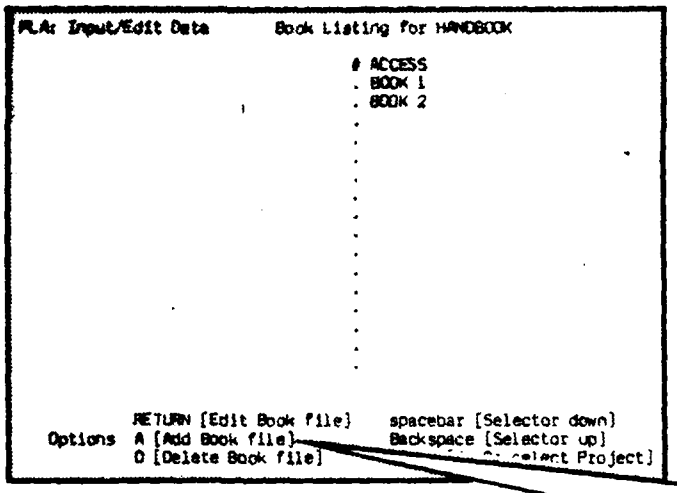
SEGMENT II: CREATING/EDITING FILES

Part 1 - Project File

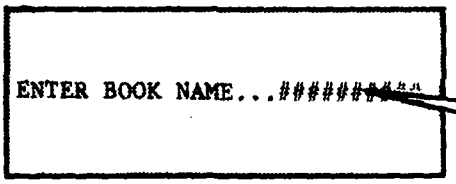


SEGMENT II: CREATING/EDITING FILES

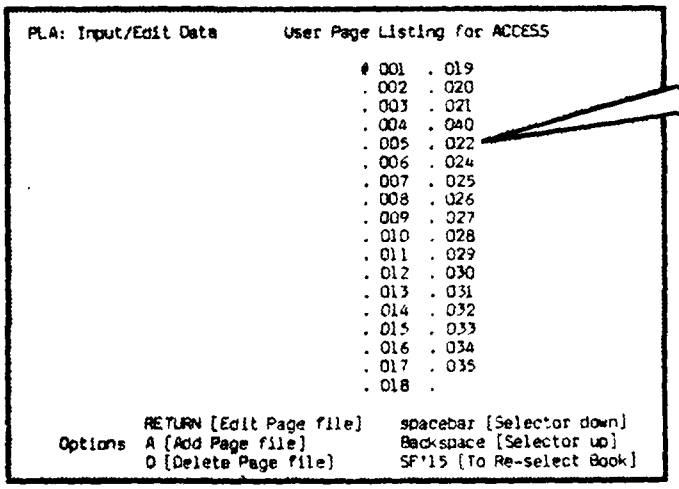
Catalog - Book Listing



1. Key in 'A' to create a new Book.

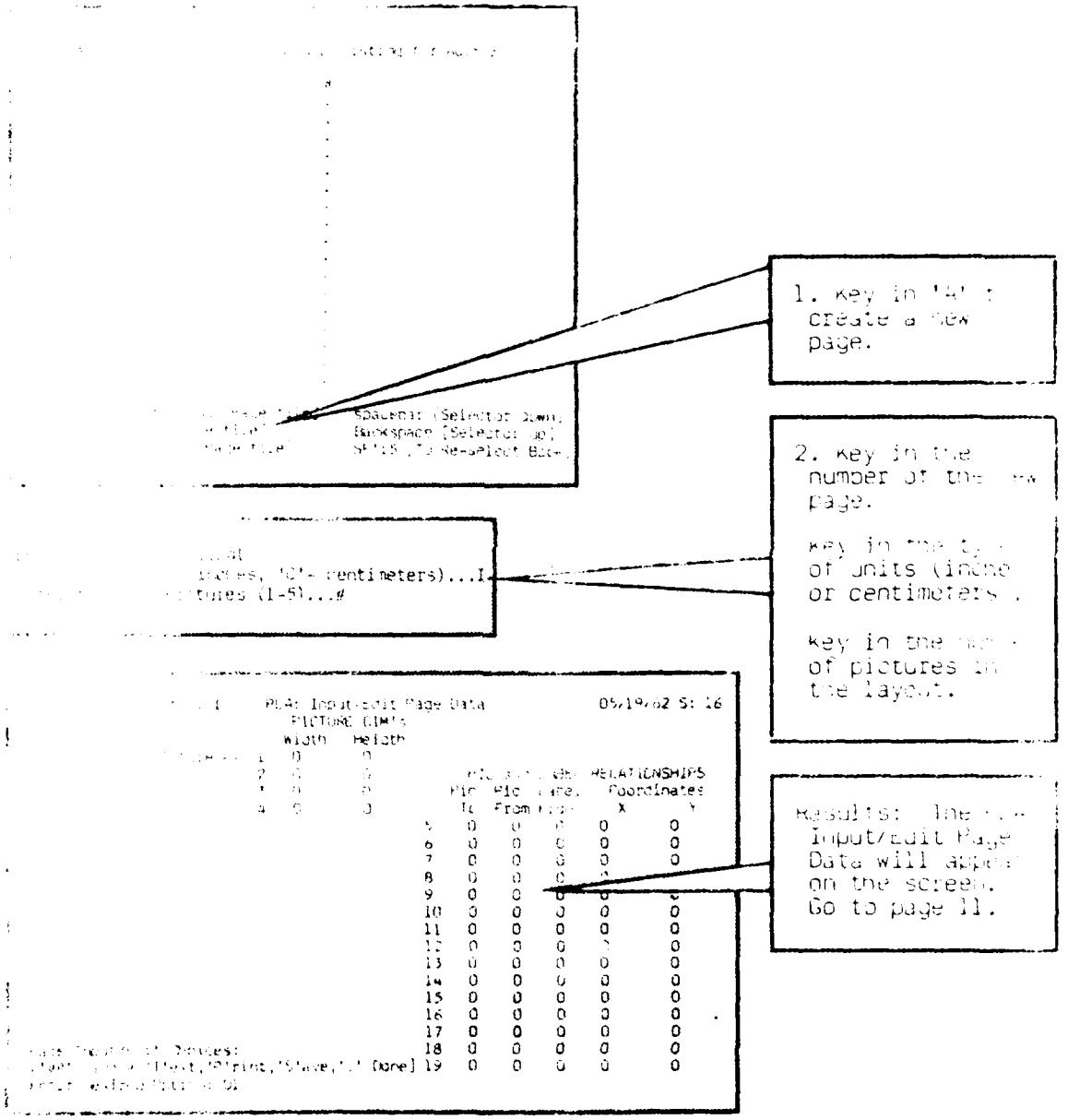


2. Key in the Name of the new Book.



Results: User Page Listing will appear on the screen. Each book may contain up to 100 pages. Go to page 10.

Note: PLA files are arranged in the following hierarchy:
Project File = up to 51 Projects
each Project = up to 51 Books
each Book = up to 100 pages.


1. Key in 'A' to create a new page.
2. Key in the number of the new page.
Key in the type of units (inches or centimeters).
Key in the number of pictures in the layout.
Results: The Input/Edit Page Data will appear on the screen. Go to page 11.
PLA: Input-Edit Page Data
05/19/82 5:16
PICTURE DIM's
Width
Height
RELATIONSHIPS
Coordinates
X
Y

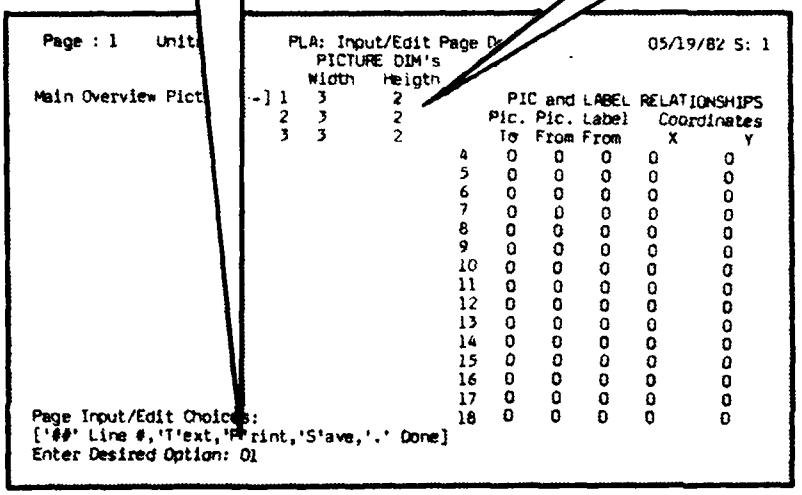
SEGMENT II: CREATING/EDITING FILES

Picture Dimensions

1. First, key in RETURN until the Cursor is on the desired line. You may return the Cursor to the previous data point by keying Special Function Key SF-15.

2. Next, key in the dimensions of each picture. You must use a 0 preceding the decimal point for any number less than one (e.g., 0.55).

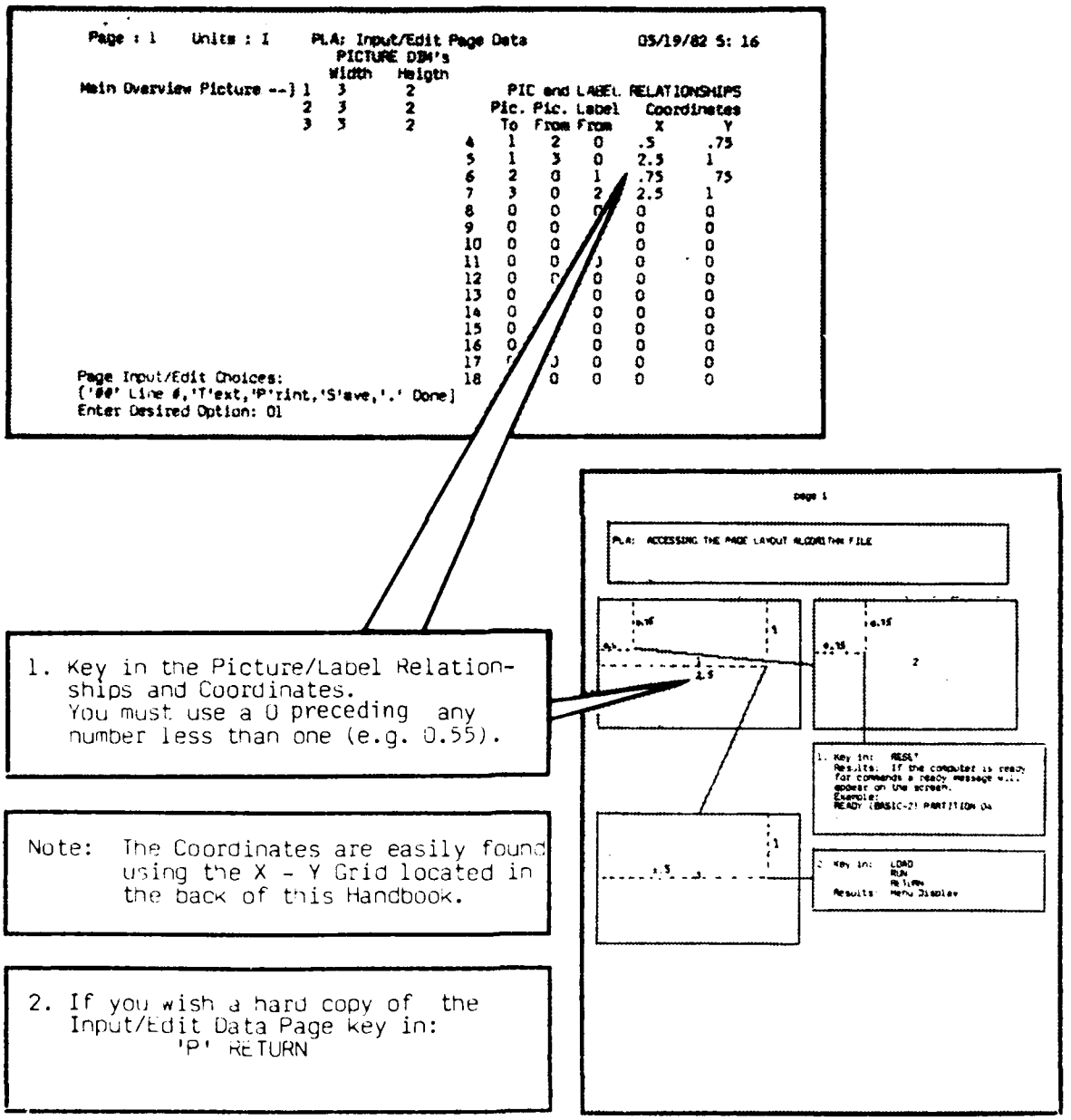
Go to page 12.



Note: Picture 1 is always the overview picture.

SEGMENT II: CREATING/EDITING FILES

Input/Edit Page Data



1. Key in the Picture/Label Relationships and Coordinates.
You must use a 0 preceding any number less than one (e.g. 0.55).

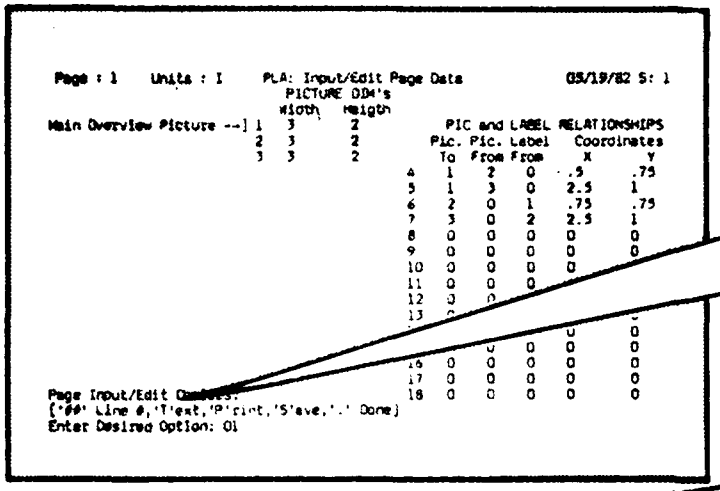
Note: The Coordinates are easily found using the X - Y Grid located in the back of this Handbook.

2. If you wish a hard copy of the Input/Edit Data Page key in:
'P' RETURN

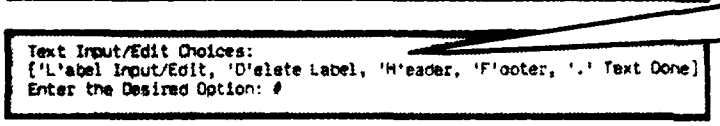
Go to page 13.

SEGMENT II: CREATING/EDITING FILES

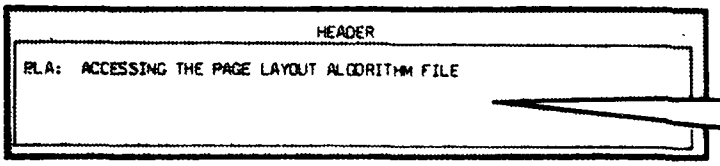
Header



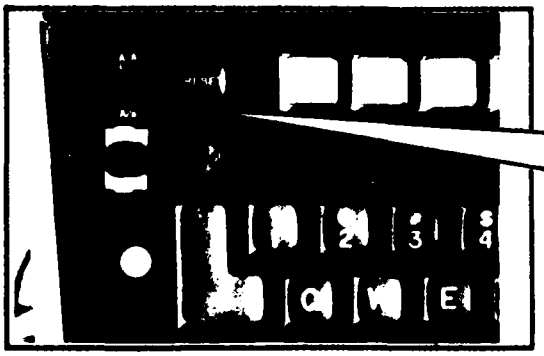
1. Key in 'T'
RETURN
Results: The Text Menu will appear on the screen.



2. If you wish a Header message key in: 'H'.
If you do not wish a Header go to page 14.



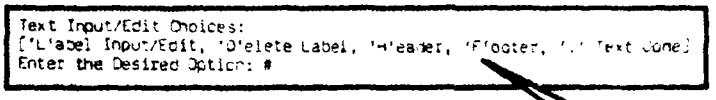
3. Key in up to six lines of Header text. Key RETURN to move Cursor next line. When the message is complete Key RETURN until the Text Menu appears.



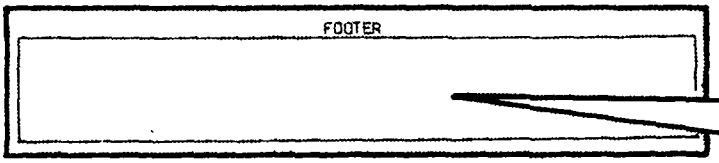
Note: If you wish to use the upper and lower case alphabet switch the selector located on the upper left corner of the key board.
Go to page 14.

SEGMENT II: CREATING/EDITING FILES

Footer



1. If you wish a Footer message key in 'F'.
   If you do not wish a Footer go to page 15.

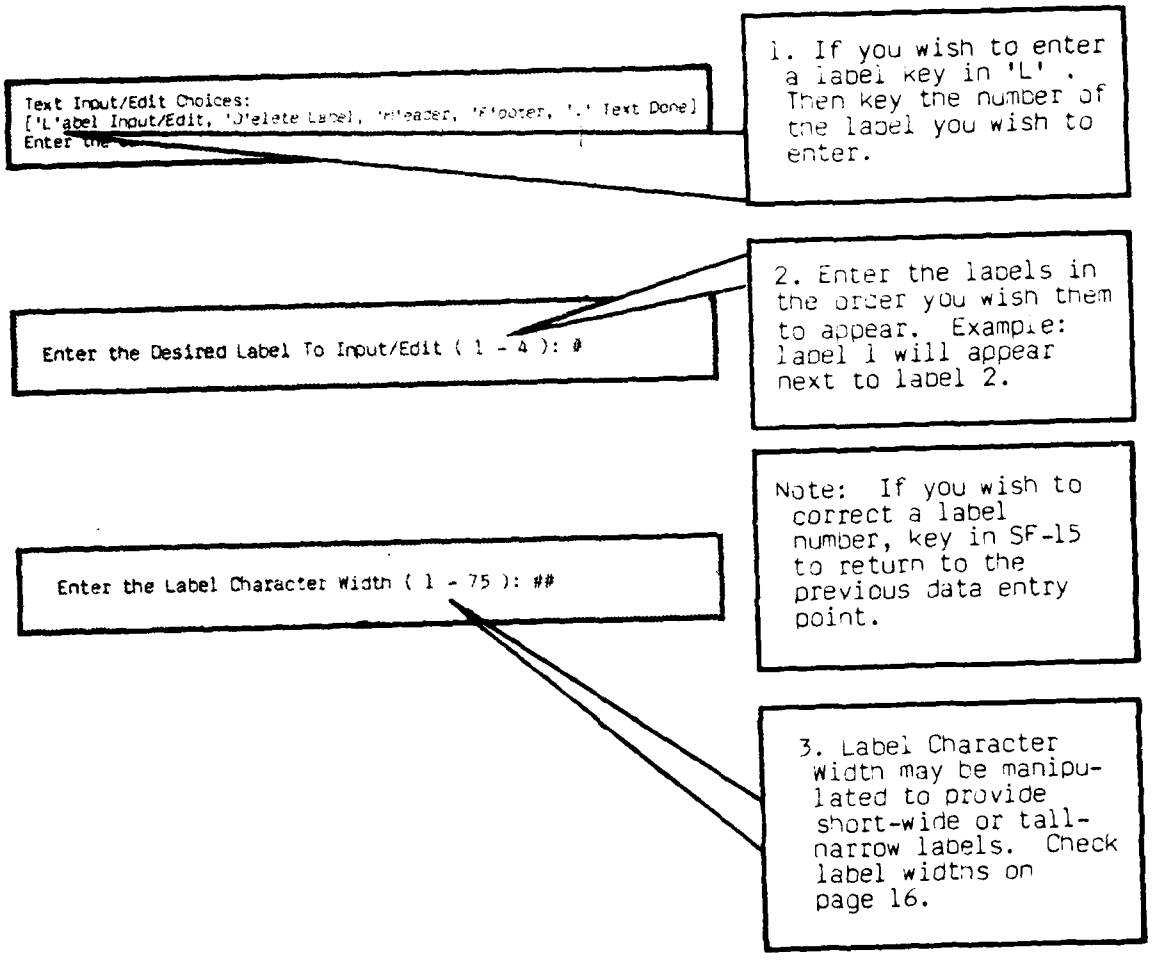


2. Key in up to six lines of Footer text. Key RETURN to move to the next line. The message will be printed exactly as you space it.

3. When the Footer message is complete key RETURN until the Text Menu reappears.
Go to page 15.

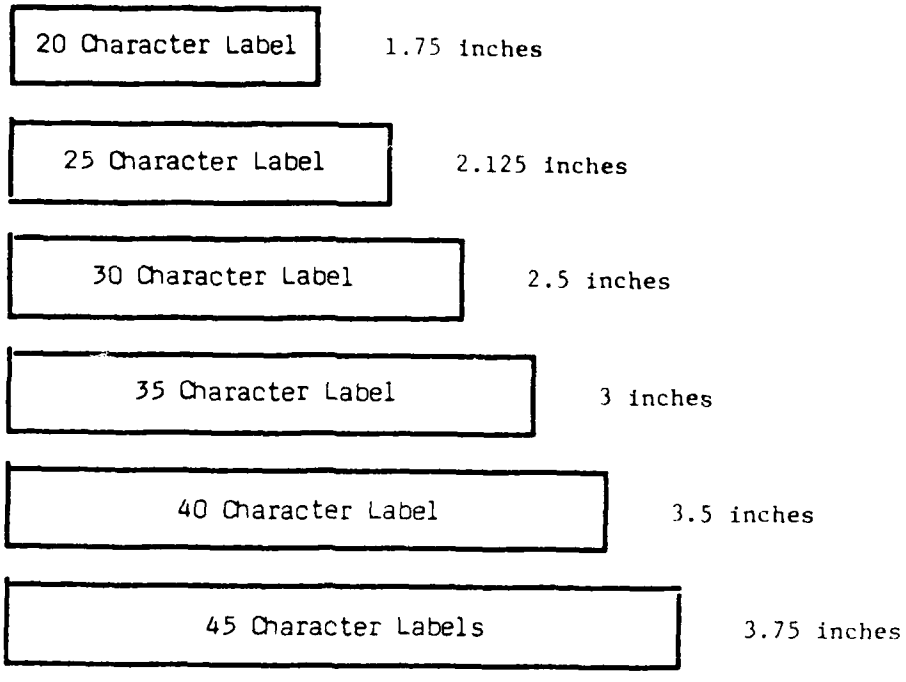
SEGMENT II: CREATING/EDITING FILES

Label



SEGMENT II: CREATING/EDITING FILES

Label Character Width



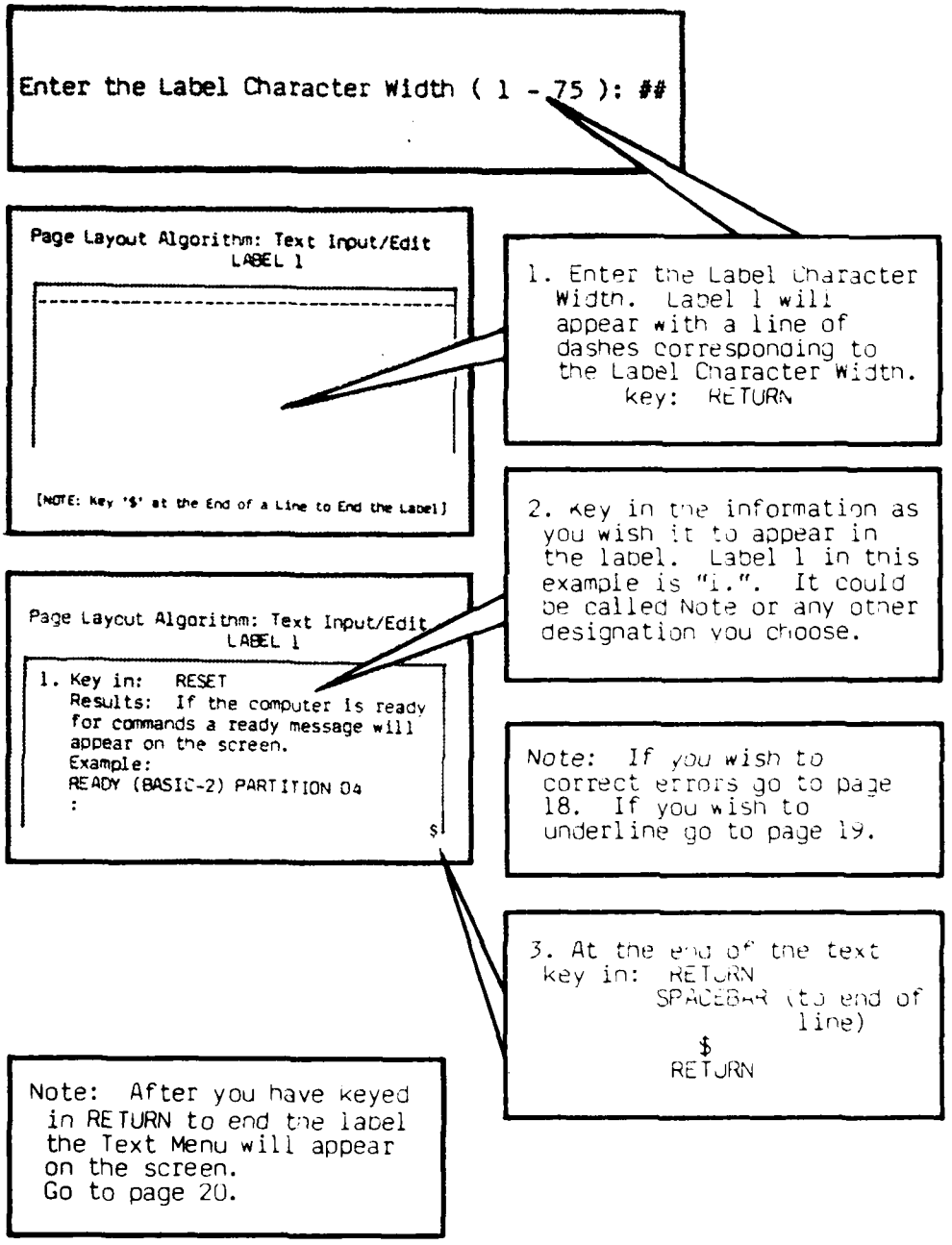
Note: The computer will allow up to 75 characters.

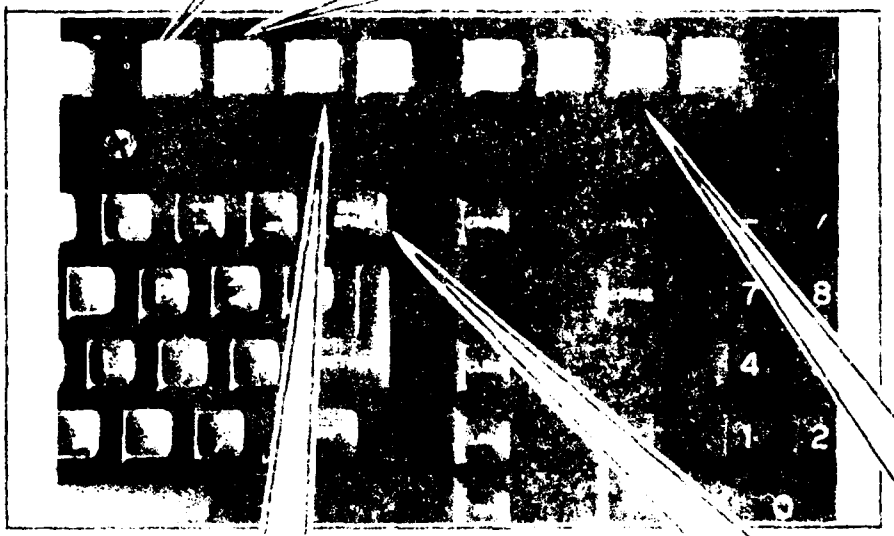
Go to page 17.

Use this Label Character Width Scale to aid in the estimation of label sizes.

SEGMENT II: CREATING/EDITING FILES

Labels




7
8
4
1
2

SEGMENT II: CREATING/EDITING FILES

Labels and Underlines

LABEL 1

Note: The Paraphrase Page is a duplicate of the Information Page with the key words blanked out. The purpose of the Paraphrase Page is to provide readers a self-check on how well they remember the material presented on the Information Page.

1. If you wish to underline a key word:

FIRST, key the underline,

THEN, key the letter.

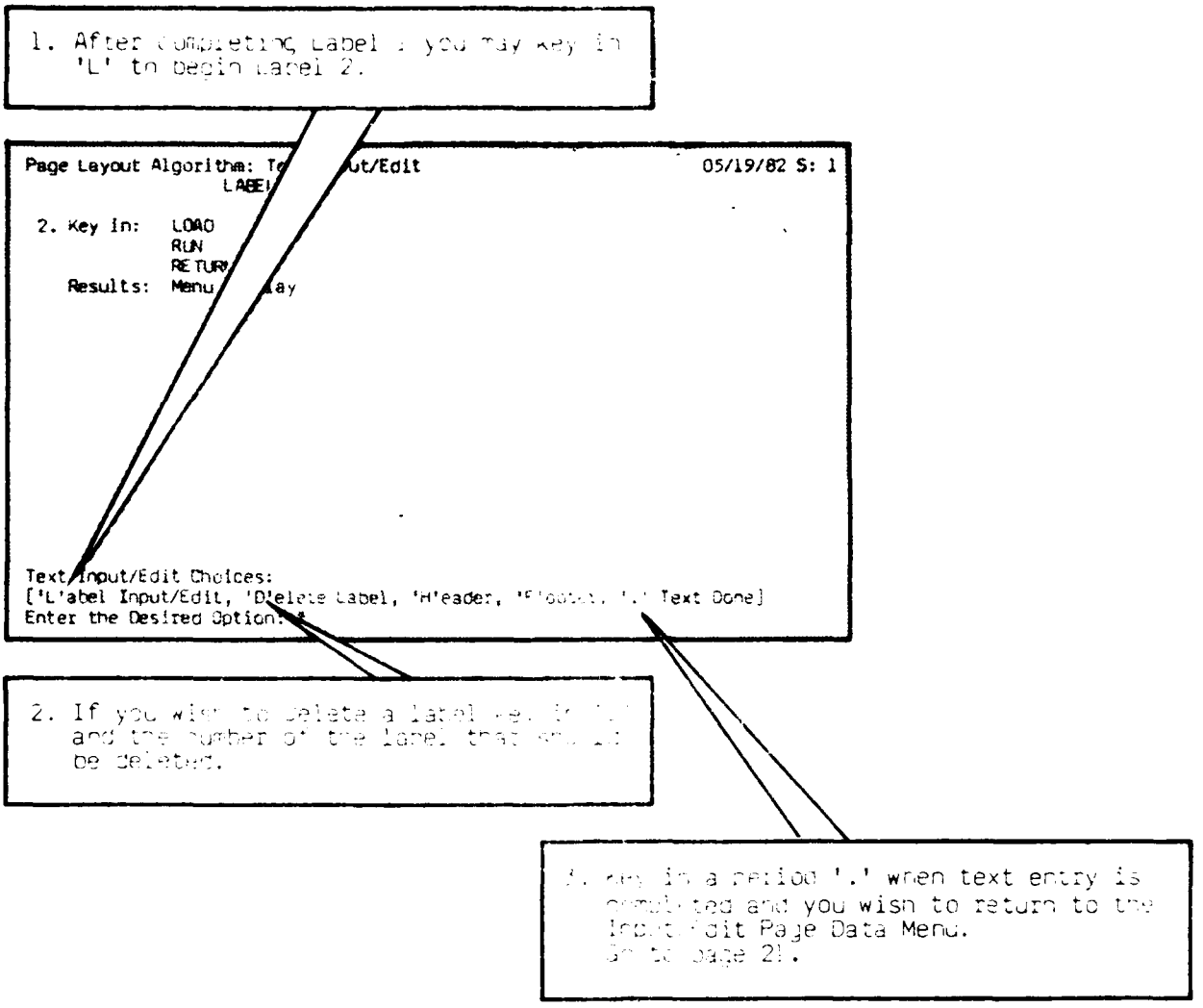
LABEL 1

Note: The _____ _____ is a duplicate of the _____ _____ with the key words _____ _____. The purpose of the _____ _____ is to provide readers a self-check on how well they remember the material presented on the _____ _____.

2. When Paraphrase Pages are printed ALL underlined words are blanked out.
Return to page 17.

SEGMENT II: CREATING/EDITING FILES

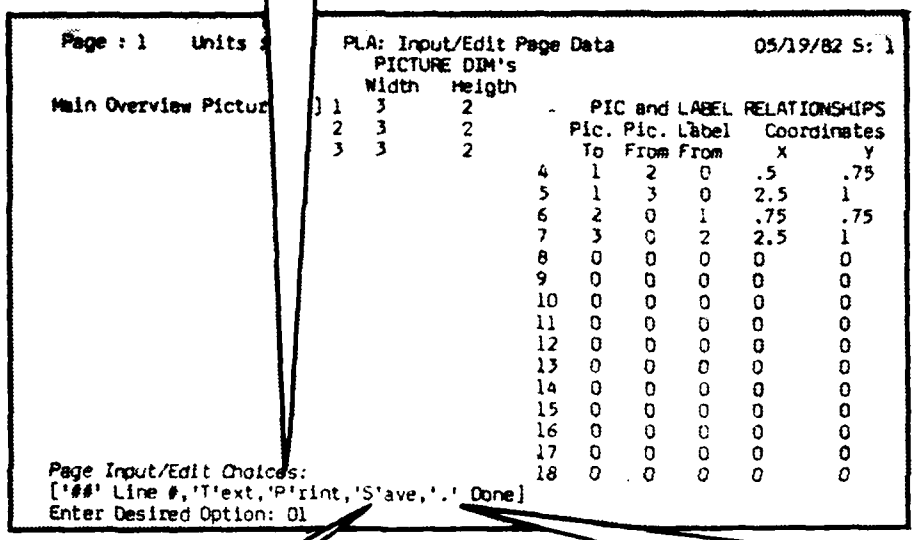
Labels



SEGMENT II: CREATING/EDITING FILES

Input/Edit Page Data

1. Option 'P' provides a hard copy of the Input/Edit Page Data, Header, and Footer.



Page : 1 Units

PLA: Input/Edit Page Data 05/19/82 S: 1

Main Overview Pictur] 1 3 2
2 3 2
3 3 2

PICTURE DIM's: Width, Heigth

PIC and LABEL RELATIONSHIPS

	Pic. To	Pic. From	Label From	Coordinates X	Y
4	1	2	0	.5	.75
5	1	3	0	2.5	1
6	2	0	1	.75	.75
7	3	0	2	2.5	1
8	0	0	0	0	0
9	0	0	0	0	0
10	0	0	0	0	0
11	0	0	0	0	0
12	0	0	0	0	0
13	0	0	0	0	0
14	0	0	0	0	0
15	0	0	0	0	0
16	0	0	0	0	0
17	0	0	0	0	0
18	0	0	0	0	0

Page Input/Edit Choices:
['##' Line #,'T'ext,'P'rint,'S'ave,'.' Done]
Enter Desired Option: 01

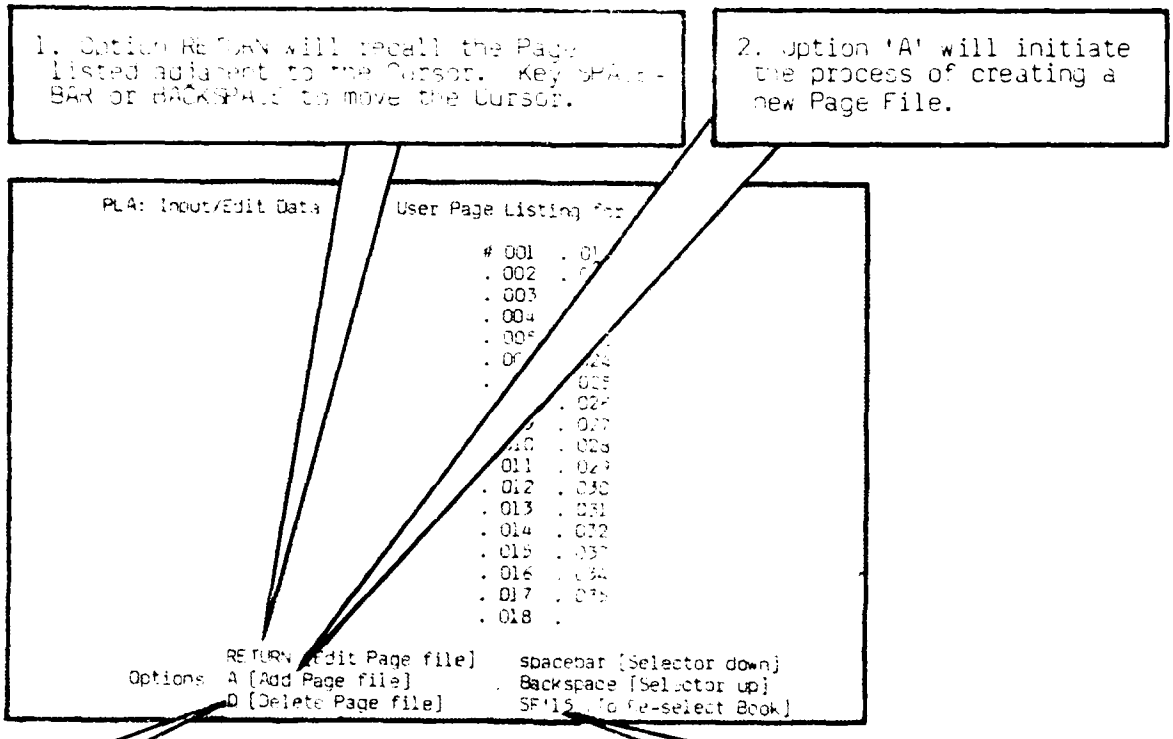
2. Option 'S' stores the Input/Edit Page Data and Text Data in the permanent Page Layout Algorithm File.

3. WARNING. Option '.' returns you to the Page Listing Menu, however, you will LOSE the data entries or changes you have made during this session.

4. For the purposes of this exercise key 'S' and go on to page 22.

SECTION II: CREATING/EDITING FILES

Input/Edit Data -- User Page Listing



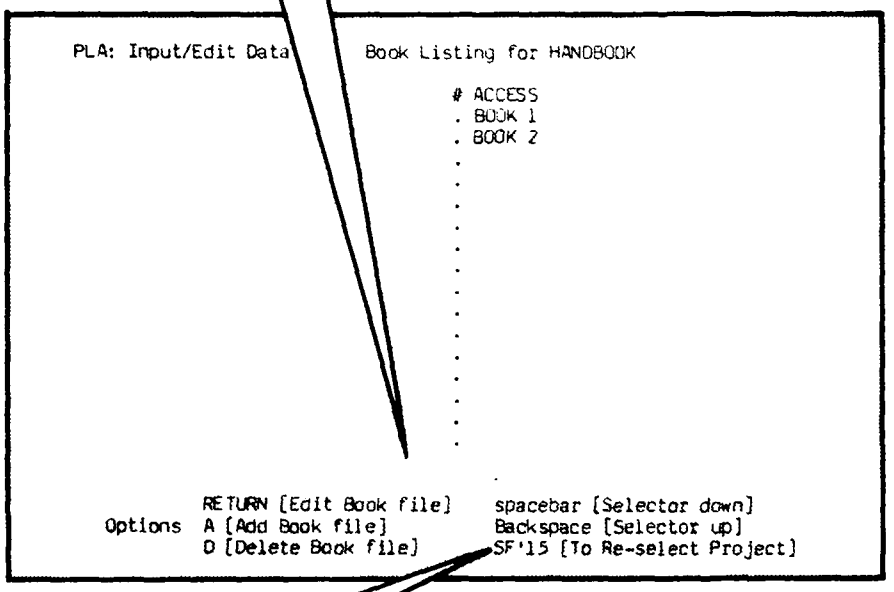
Note: Before deleting the file the computer will ask ARE YOU SURE (Y/N)? Keying in 'Y' will delete the file. Keying in 'N' will retain the file.

5. For the purposes of this exercise key SF-15 and go to page 23.

SEGMENT II: CREATING/EDITING FILES

Input/Edit Data -- Book File

1. The menu options permit you to edit, add, or delete a Book.



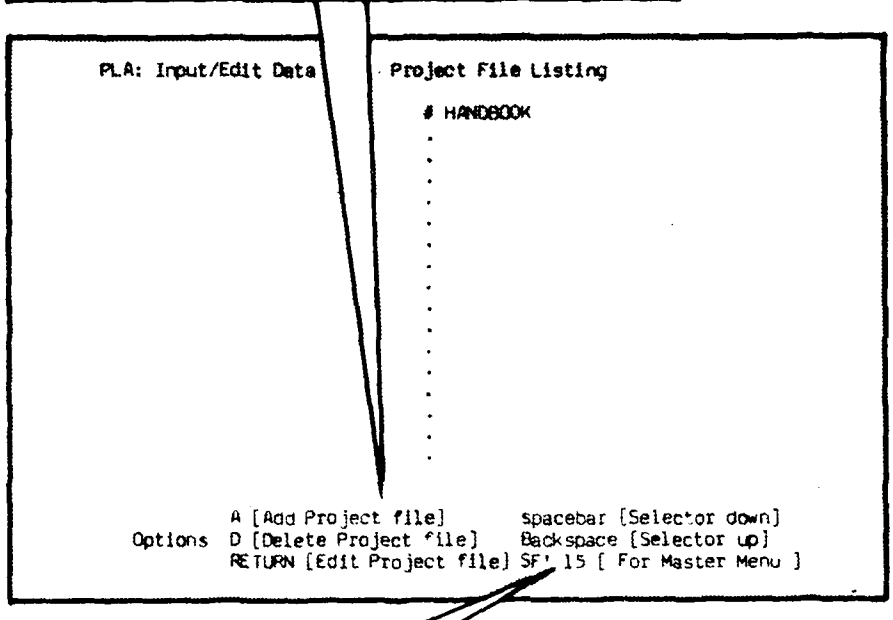
2. Option SF 15 will return you to the Project File Listing.

3. For the purposes of this exercise key SF-15 and go to page 24.

SEGMENT II: CREATING/EDITING FILES

Input/Edit Data -- Project File

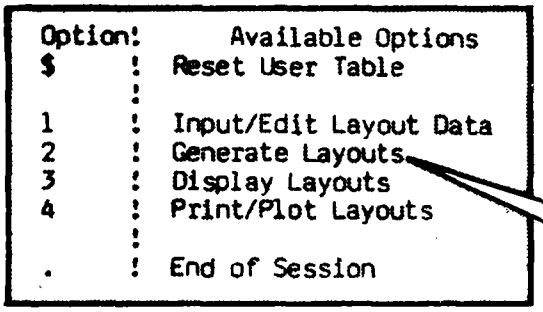
1. The Menu options permit you to edit, add, or delete a Project.



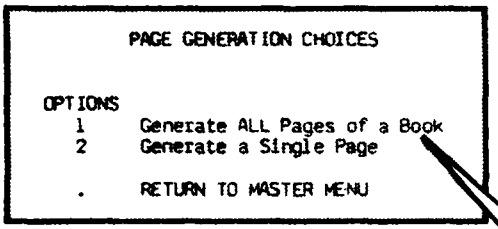
2. Option SF 15 will return you to the Master Menu.

3. For the purpose of this exercise key SF-15 and go to page 25.

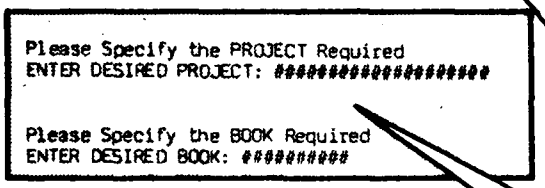
SEGMENT III: PAGE LAYOUT GENERATION



1. Key in '2' to access the Generate Layouts option. Go to page 26 after reading the remaining labels on this page.



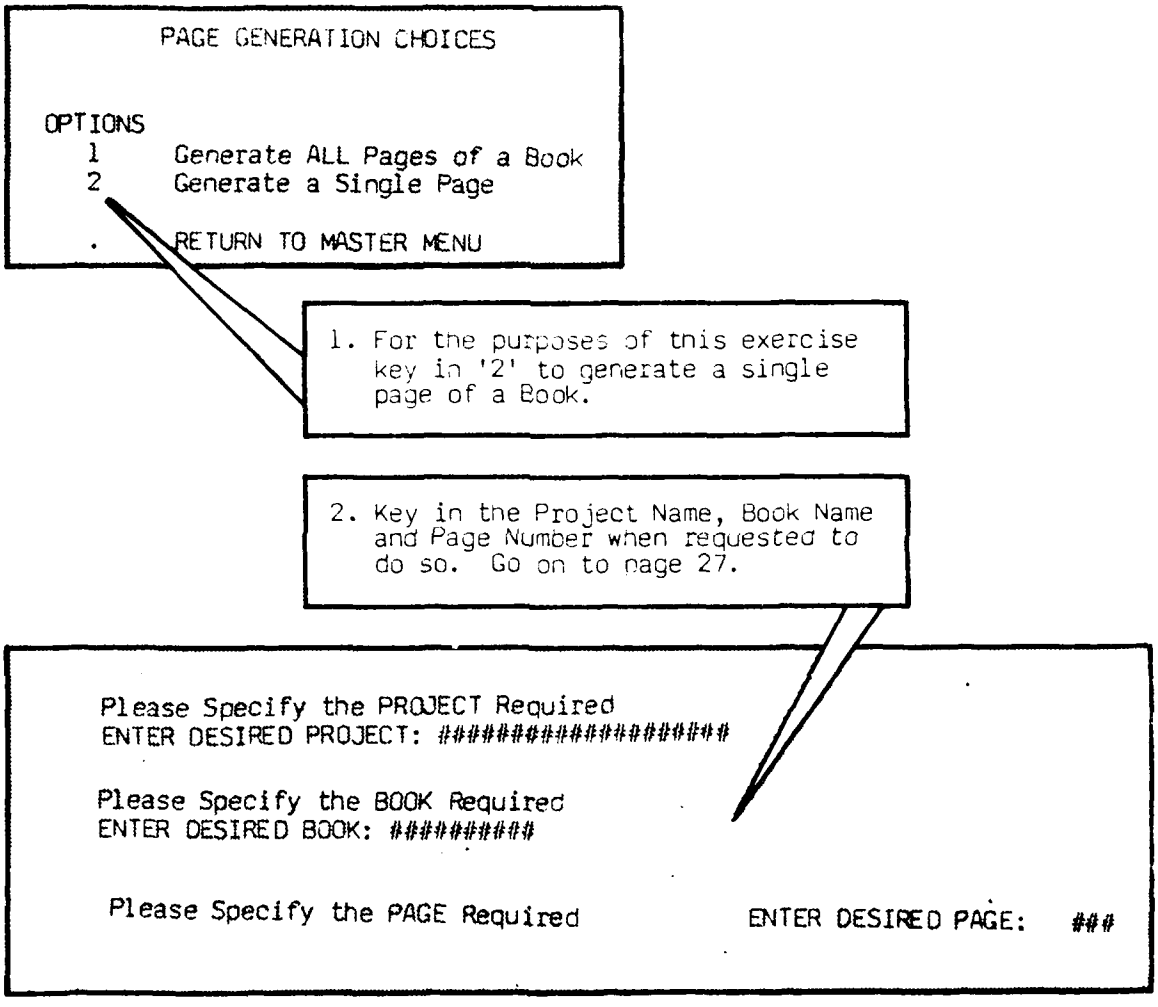
Note: The Generate Layouts option actually generates page layouts using the data entered into the Input/Edit Layout Data File.



2. Option '1' will generate all the Pages of a Book.

3. If you selected option '1' you would key in the Project Name and Book Name when requested to do so.

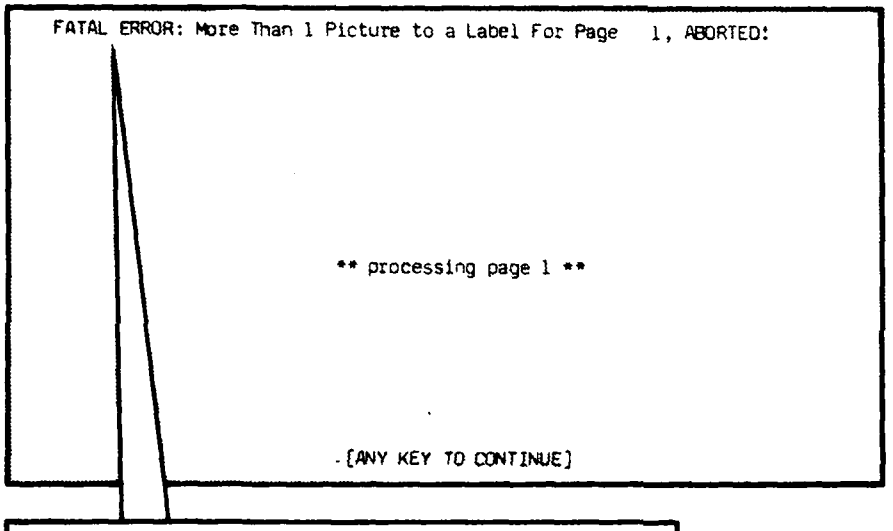
SEGMENT III: PAGE LAYOUT GENERATION



SEGMENT III: PAGE LAYOUT GENERATION

Error Messages

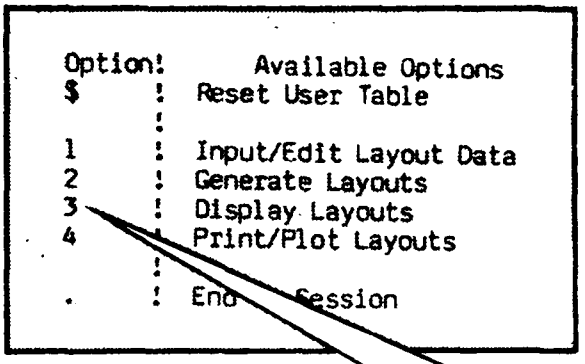
1. FATAL ERROR messages indicate why a Page may not be generated. A complete list of error messages is provided in Appendix C.

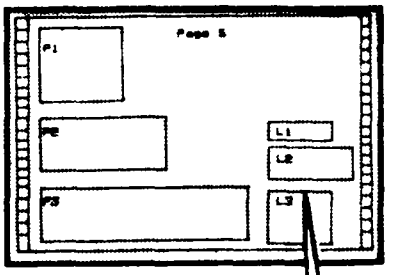


2. When an Error Message occurs, key in SF 15 to return to the Master Menu. You may then proceed to Input/Edit Page Data to correct the error.

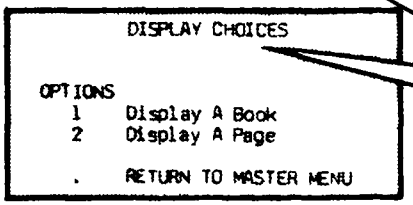
3. If a Fatal Error does not occur the program will generate all the pages. When the last page is generated the Page Generation Menu will return to the screen. Key a period '.' to return to the Master Menu. Go to page 28.

SEGMENT IV: DISPLAY PAGE LAYOUTS



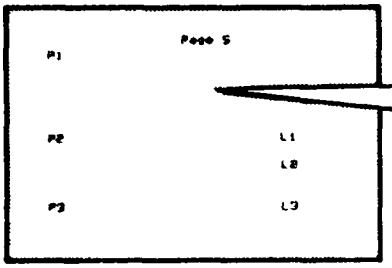


Graphics Terminal



1. Key in '3' to list the Display Layout Menu.

2. The Display Option works only on a Graphics Terminal.

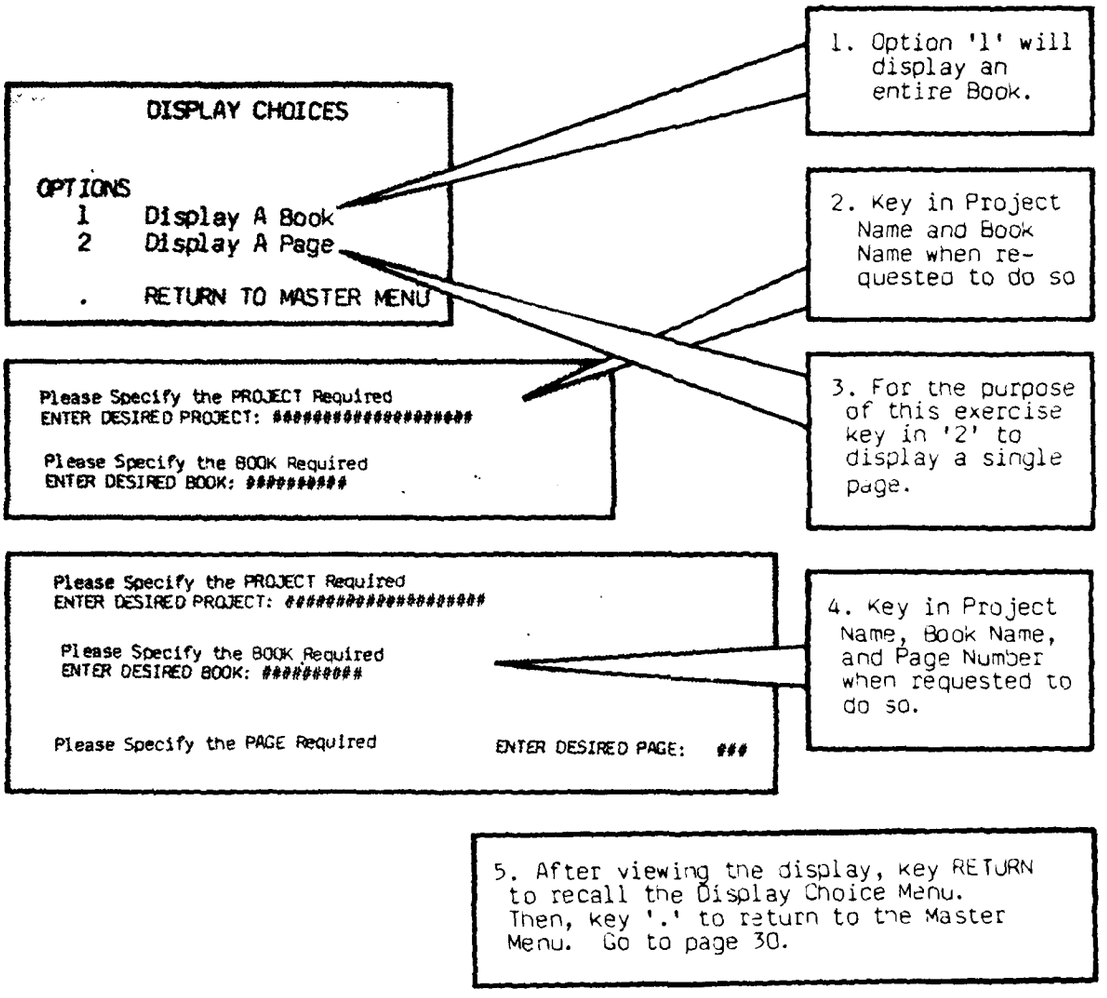


Regular Terminal

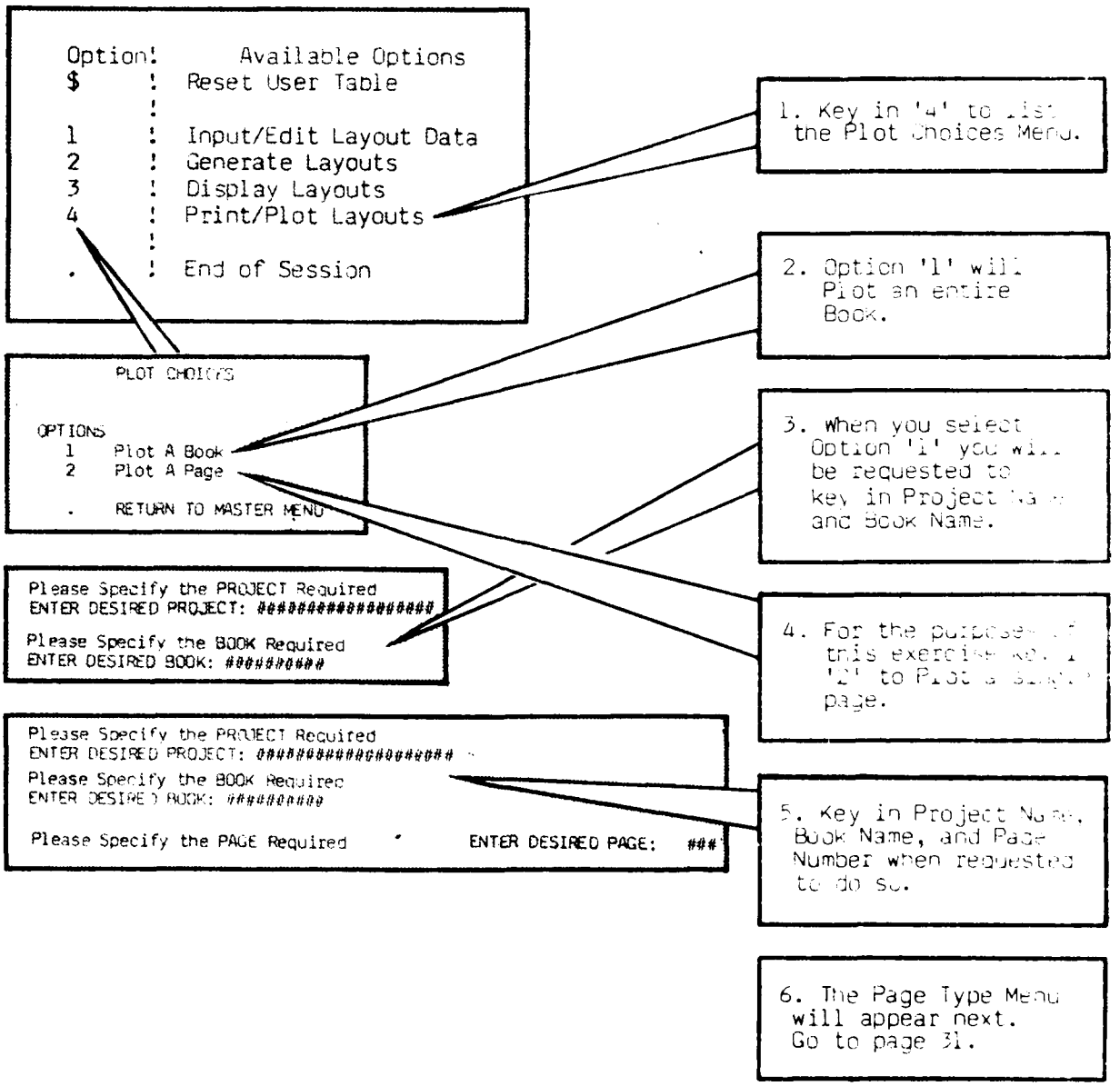
3. The Regular Terminal will not display the lines.

Note: The purpose of the Display Option is to provide the user a quick way to examine the displays witnout printing them. Go to page 29.

SEGMENT IV: DISPLAY PAGE LAYOUTS



SEGMENT 7: PRINT/PLOT PAGE LAYOUTS



SEGMENT V: PRINT/PLOT PAGE LAYOUTS

Information/Paraphrase Pages

1. Option '1' prints out Information Pages

PAGE TYPE CHOICES

OPTIONS
1 Information Page(s)
2 Paraphrase Page(s)

. RETURN TO PREVIOUS MENU

Note: The Information Page is the basic instructional page in a Procedure Training Aid. The pages in this Handbook are Information Pages.

2. Option '2' prints out Paraphrase Pages.

Note: The Paraphrase Page is a duplicate of the Information Page with key words blanked out. The purpose of the Paraphrase Page is to provide readers a self-check on how well they remember the material presented on the Information Page.

3. For the purposes of this exercise key '1' and go to page 32. The Page Arrow Menu will appear next.

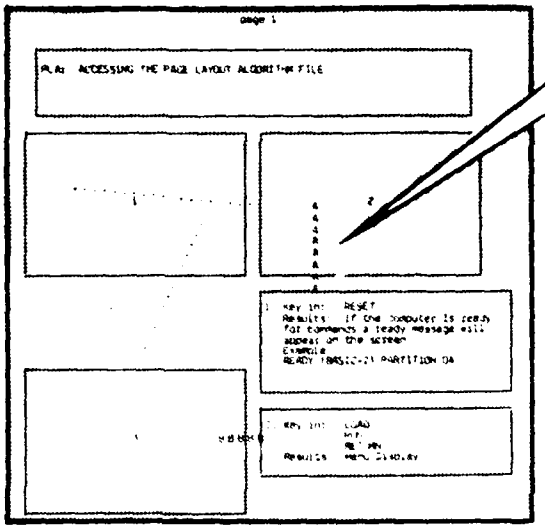
SEGMENT V: PRINT/PLOT PAGE LAYOUTS

Arrow Choices

PAGE ARROW CHOICES

OPTIONS
1 With ALL generated arrows
2 With ALL generated arrows lettered
3 With NO label/picture cutting arrows
4 With NO Arrows At All

. RETURN TO PREVIOUS MENU



1. Option '1' provides a printout with all arrows including those that cut labels and pictures.

2. Option '2' provides label arrows printed in letters instead of dots.

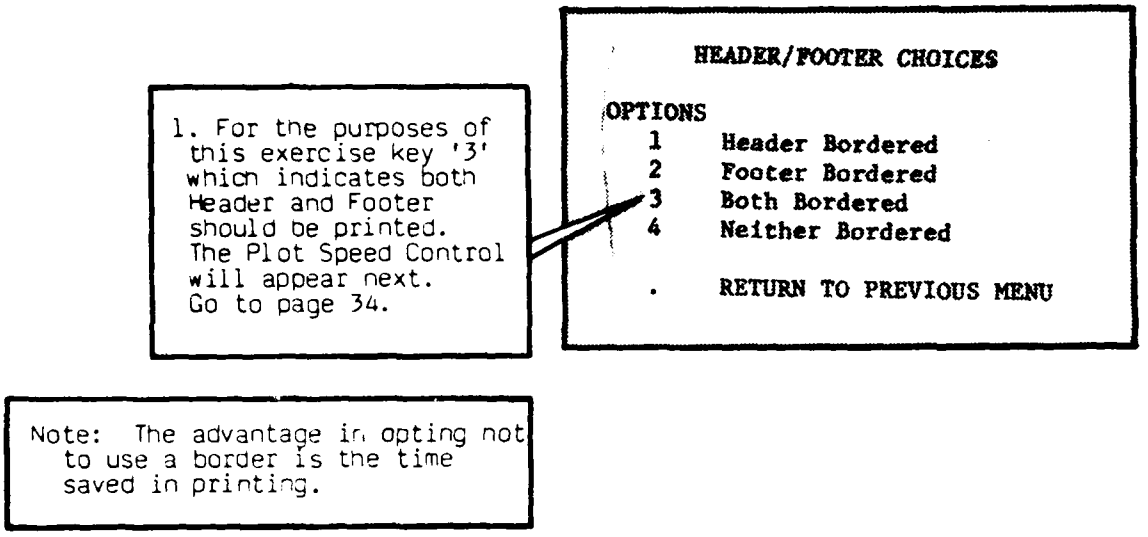
3. Option '3' provides a printout which eliminates arrows that cut labels or pictures.
Option 3 is generally used as the final printout. The eliminated arrows are drawn in by hand.

4. Option '4' provides a printout which eliminates all arrows.

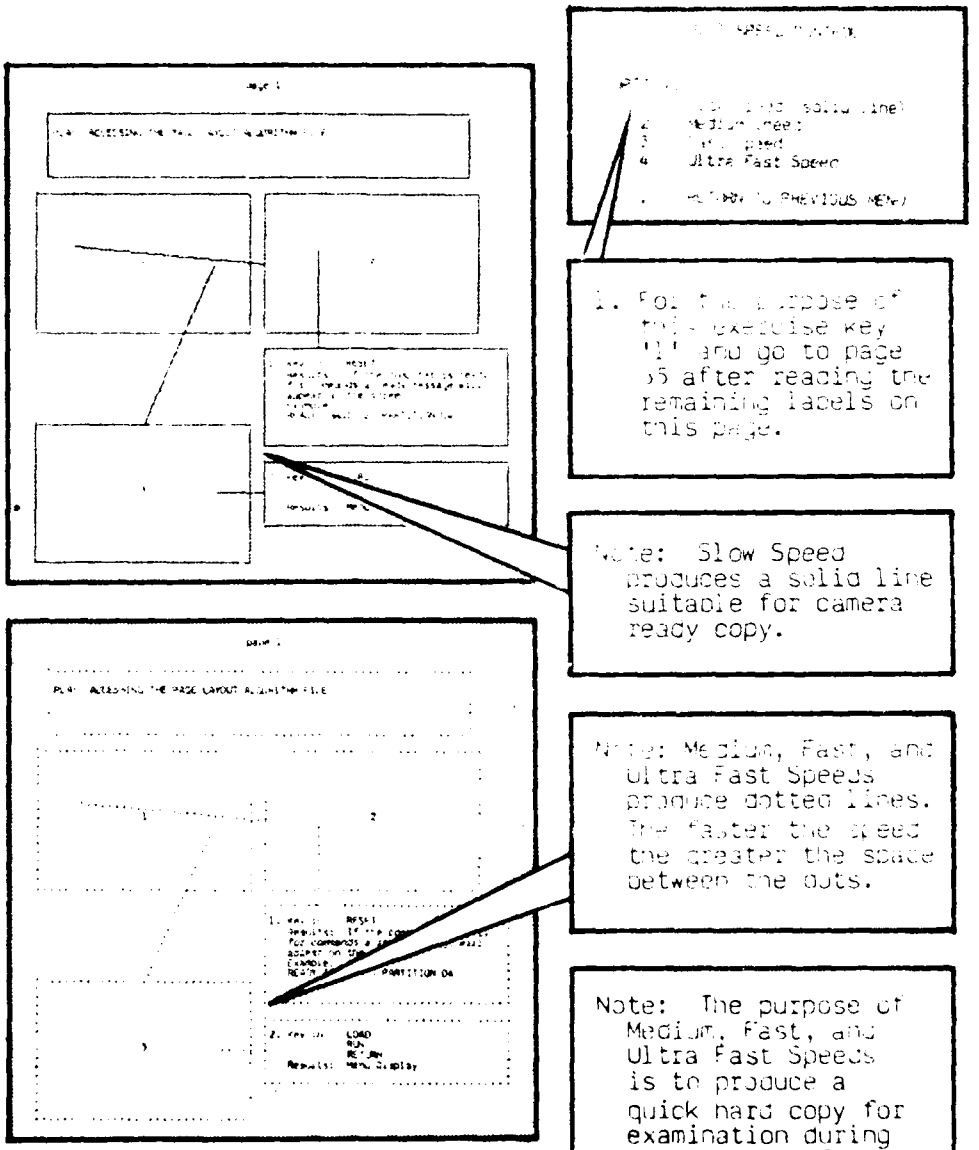
5. For the purposes of this exercise key '1' and go to page 53. The Header/Footer Menu will appear next.

SEGMENT V: PRINT/PLOT PAGE LAYOUTS

Header/Footer Border Printouts



SEGMENT 1: [illegible]


4 Ultra Fast Speed
1. For the purpose of this exercise key "1" and go to page 05 after reading the remaining labels on this page.
Note: Slow Speed produces a solid line suitable for camera ready copy.
Note: Medium, Fast, and Ultra Fast Speeds produce dotted lines. The faster the speed the greater the space between the dots.
Note: The purpose of Medium, Fast, and Ultra Fast Speeds is to produce a quick hard copy for examination during development of the page layout.

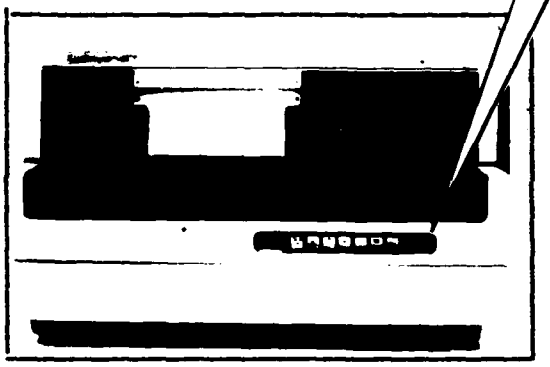
SEGMENT V: PRINT/PLOT PAGE LAYOUT

Daisy Wheel Printer

Make Sure the Daisy-Wheel Top-of-Form is Set Where You Want It, and the pitch is set to '12', and then Hit Any Key to Continue.

Note: This statement will appear on the screen when the program is ready to print.

1. Switch the Daisy Wheel Pitch Control to 12. Make sure the power is turned on.

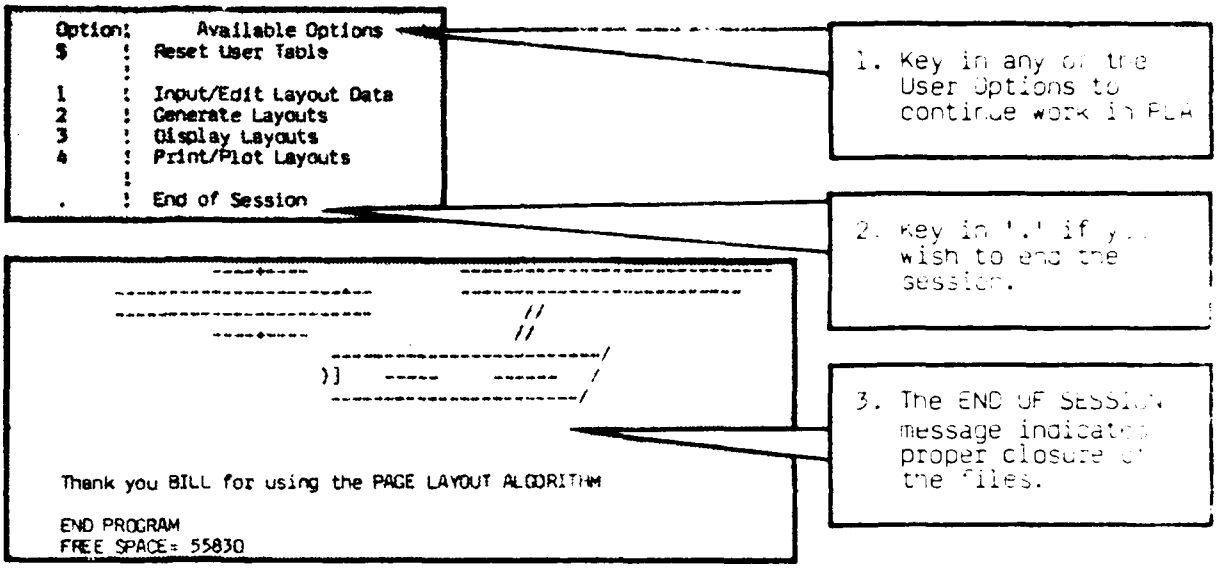


2. Hit any key to Print/Plot.

3. When Print/Plot is completed the Plot Choice Menu will appear on the screen.

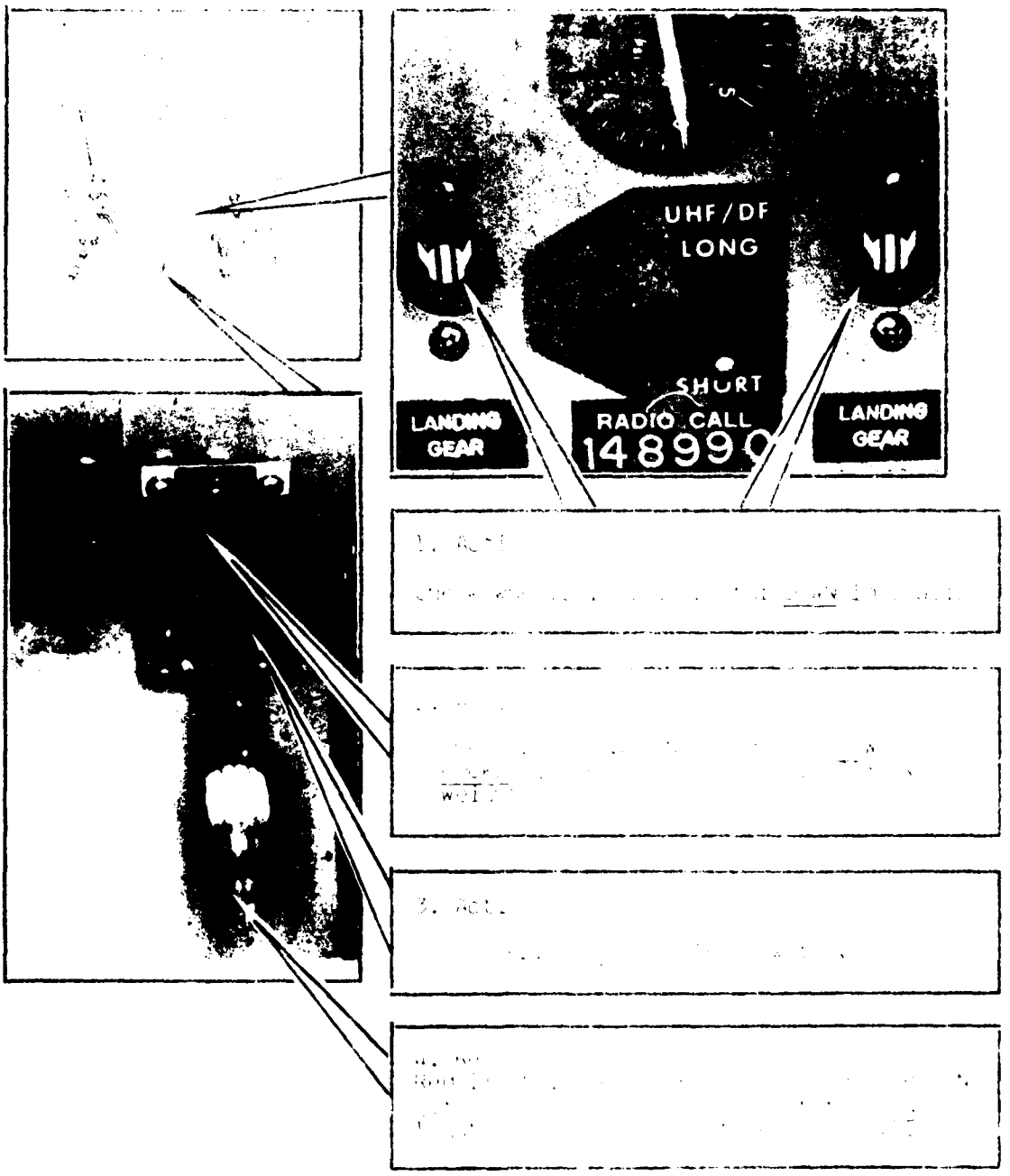
4. For the purposes of this exercise key in a period '.' to return to the Master Menu. Go to page 36.

SEGMENT VI: END OF SESSION



APPENDIX A

SAMPLE PAGES OF INSTRUCTIONAL MATERIALS CREATED USING PLA


UHF/DF
LONG
SHORT
RADIO CALL
148990
LANDING GEAR
LANDING GEAR

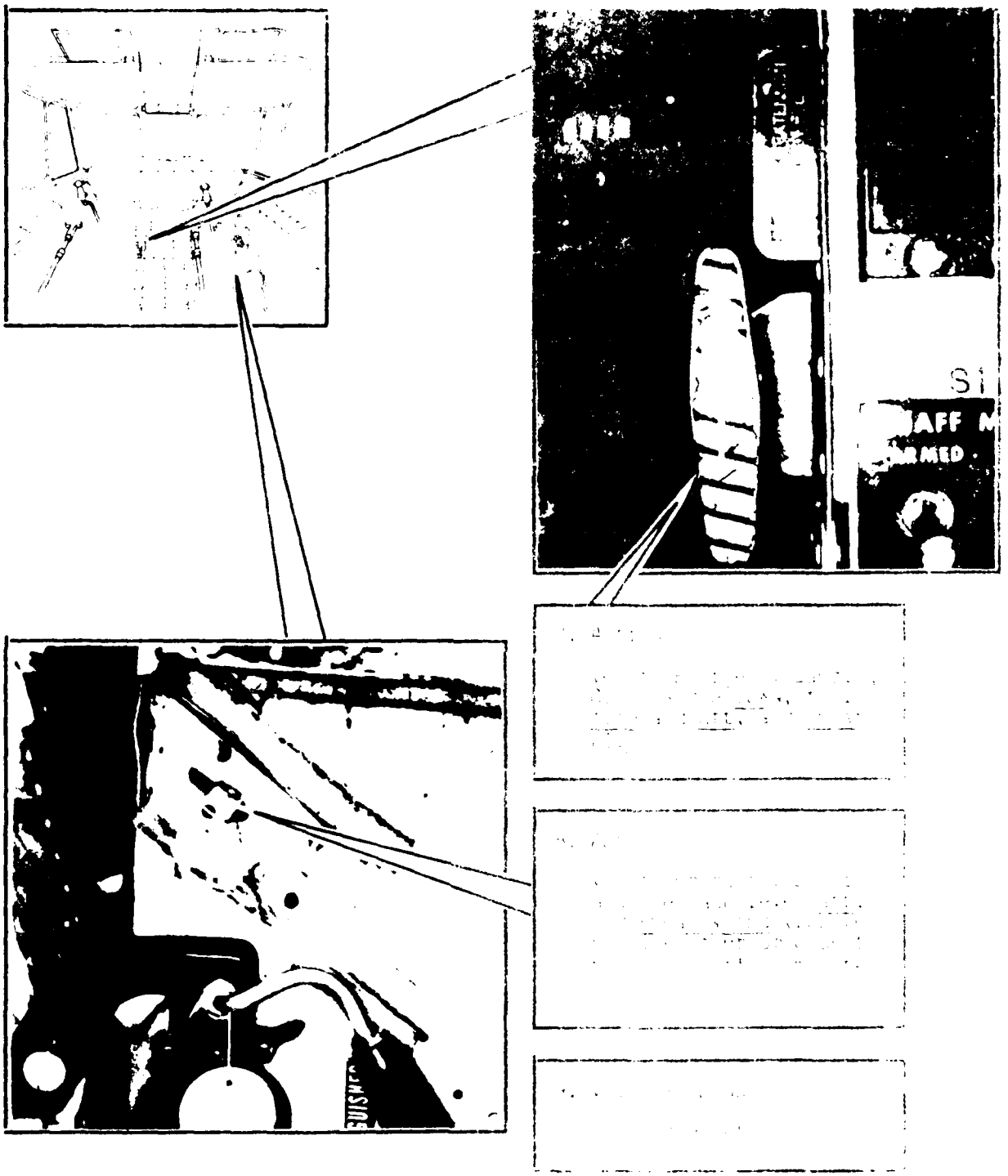
5. Action

Release HDL LT TEST switch

6. Results

Light in LDG GEAR CONT handle goes OUT

GO TO PAPER MOCK-UP: . Step through item
. Touch where each action and response takes place



GO TO PAPER MOCK-UP: . Step through each item
. Touch where each action is to take place

APPENDIX B

FORMAT MODEL FOR DESIGNING PROCEDURE TRAINING AIDS

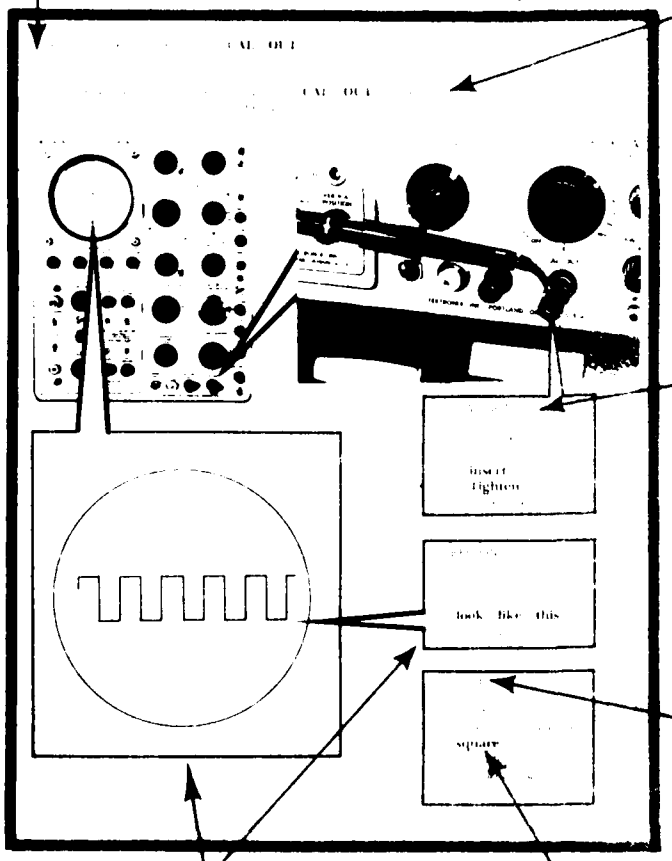
FORMAT MODEL
PERFORMING PROCEDURES

A general format for use in designing training m[illegible] which present steps of a p[illegible] to be performed from memory.

Performing Procedures Format Model - Page 1

Use this page format to present each step in a procedure.
The purpose of this page format is to present:
- a word description of the step--emphasize human action.
- a visual display of the step--emphasize human action.
- the purpose of the step.
- the location of actions or equipment.
- the system response to actions taken.
- notes: additional needed information.

Break procedure into logical steps.
Each step should start on a new page.



Keep purpose short and simple.

Use line drawings or photographs.

If possible, each step should have no more than [illegible] actions.

State Action, and Response if there is one, and any Note. Number the boxes in the order you want them read.

Use notes to present additional information that must be recalled and used on the job.

If the system makes a response that should be noted or checked, present the response.

Under [illegible]

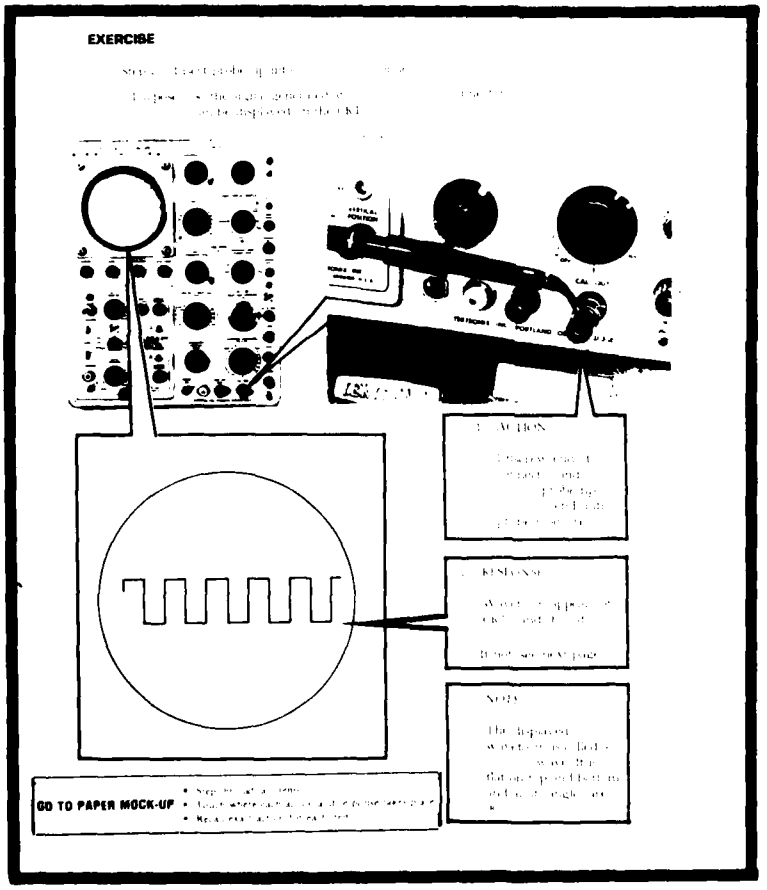
Keep pages simple, with no more than 3 or 4 boxes per page. Use additional pages if necessary.

Performing Procedures Format Model - Page 2

Use this page format immediately following each use of the page 1 format.

The purpose of this page format is to:
- provide students exercise in the recall of key words in the procedure.
- direct the students to practice the step on the paper mock-up.

Copy the previous page. Then drop out key words that were underlined on the previous page.

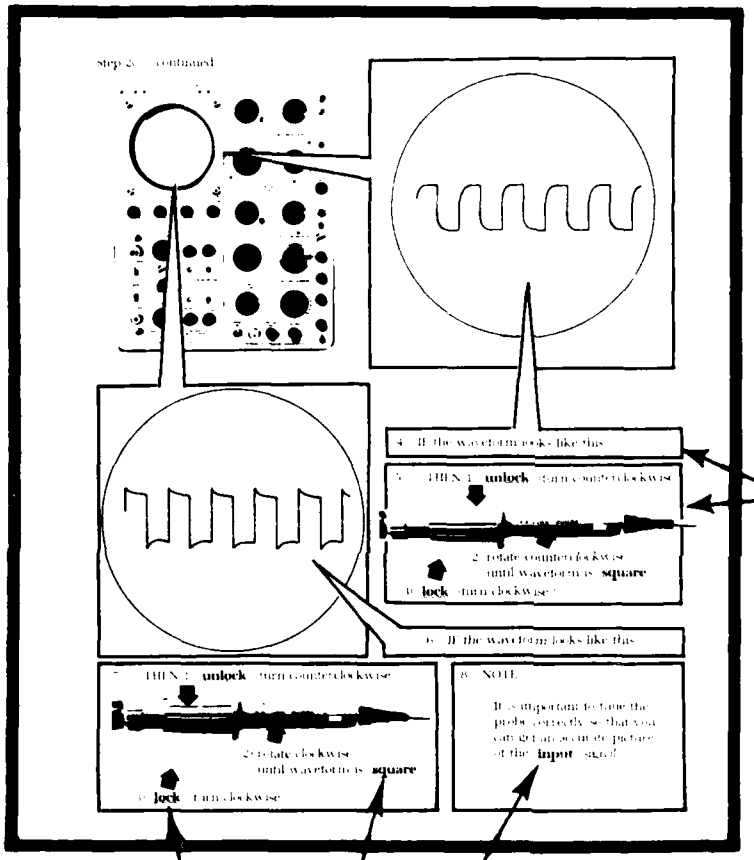


Add directions requiring students to go to the paper mock-up to practice the step.

Performing Procedures Format Model - Page 3

Use this If/Then page to describe simple branches in a procedure.

The purpose of this page format is to:
- describe a special condition that changes the normal procedure.
- describe the action to respond to the special condition.



For any additional Responses and Actions, use the *IF . . . THEN* format.

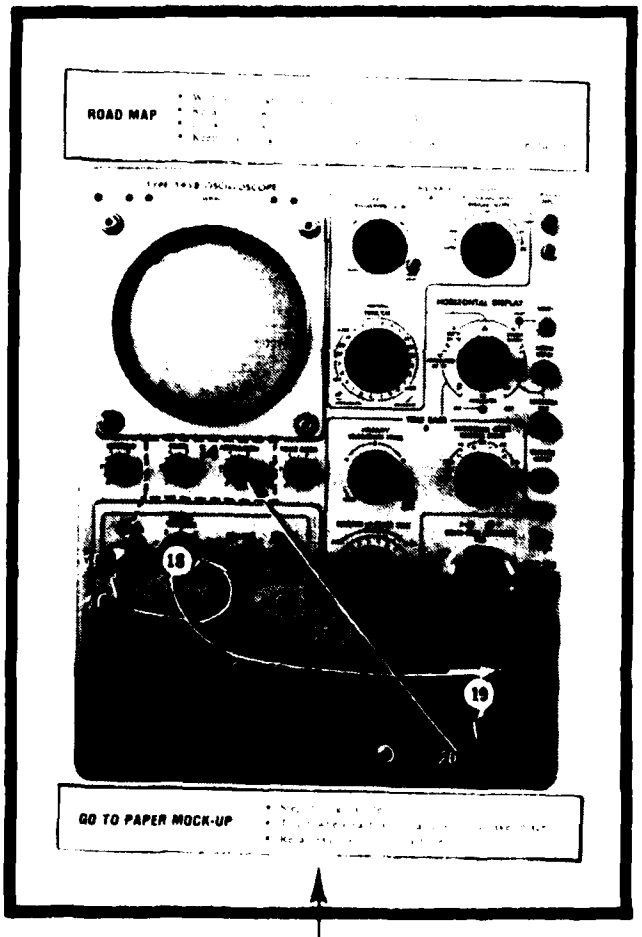
Continue to underline key words.

Performing Procedures Format Model - Page 4

Use this page after presenting each set of 5 to 7 steps in a procedure.

The purpose of this page format is to provide a finger tracing exercise to aid students in recalling a sequence of steps.

For each cluster of 5 to 7 steps, present a Road Map showing how the steps are chained together.

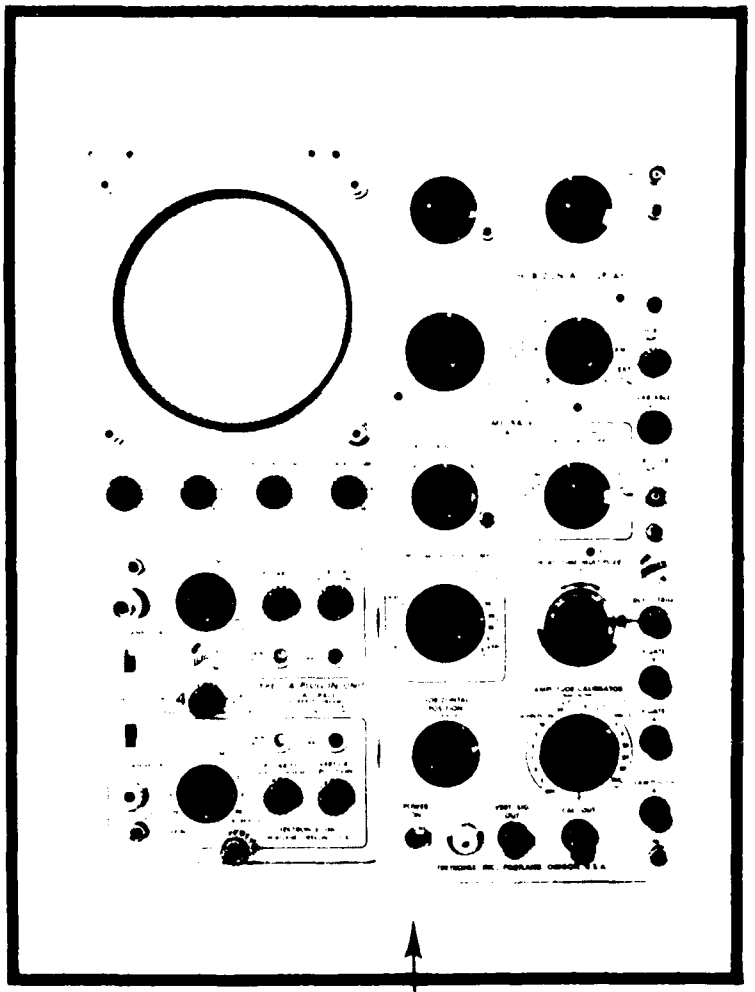


Present last step from previous cluster

If the procedure is to be performed on the job with a checklist, present the checklist items here.

Use this type of page at the end of the learning [illegible].

The purpose of this page format is to provide [illegible] with a way to practice one step, a set of steps, or all the steps in a procedure without the [illegible] of guides and prompts.



Make sure this page is a foldout that can be used at any time.

If the procedure is to be performed on the job with a checklist, present the entire checklist here, or on the opposite page where it can be easily seen while viewing this page.

APPENDIX C

PLA SYSTEM ERROR MESSAGES

PLA SYSTEM ERROR MESSAGES

The occurrence of a Fatal Error Message indicates that a specific page could not be generated for the reason stated in the message. The specific page number is stated in the space designated "###" in the list of error messages.

A Fatal Error indicates that the PLA system was unable to generate a page layout using the data entered in the Input/Edit Page Data for the specific page. The PLA system, after exhausting the repertoire of solutions for that problem, has aborted the process and has provided a Fatal Error Message explaining the reason for terminating the process. The Fatal Error Messages provide sufficient guidance to enable the author to correct the Input/Edit Page Data for that page.

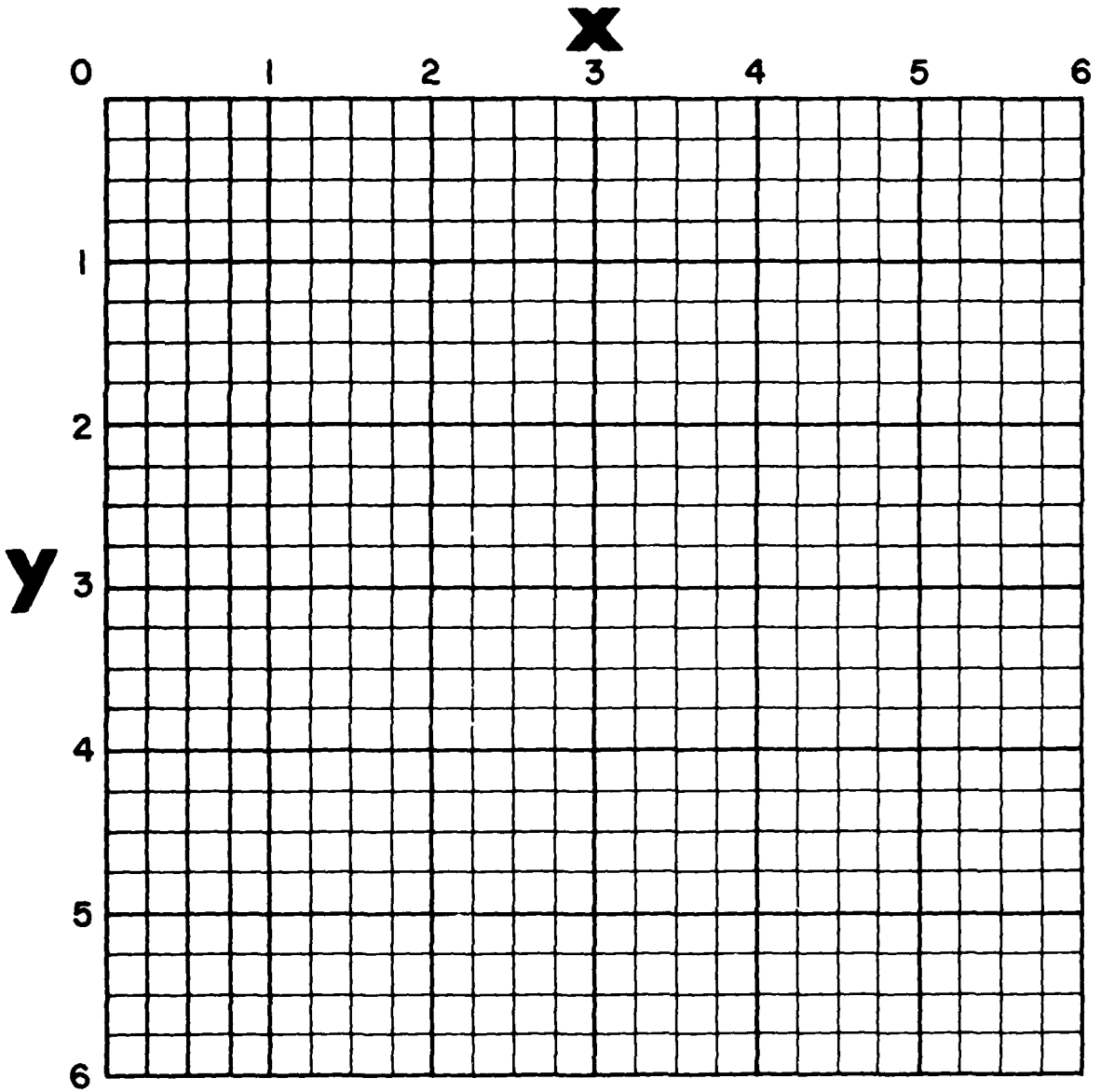
PLA: SYSTEM ERROR MESSAGES

FATAL ERROR: Label too wide for page ###, ABORTED!
FATAL ERROR: Label too long for page ###, ABORTED!
FATAL ERROR: Label too wide and long, page ###, ABORTED!
FATAL ERROR: No Pictures(s) Present in the Data for Page ###, ABORTED!
FATAL ERROR: Illegal Layout, More Than 1 Label to a Pic For Page ###, ABORTED!
FATAL ERROR: Main Overview Pic Referenced Illegally For Page ###, ABORTED!
FATAL ERROR: Main Overview Pic Referenced by a Label for Page ###, ABORTED!
FATAL ERROR: A Label is Missing in the Sequence For Page ###, ABORTED!
FATAL ERROR: Illegal Picture to Label Relationship For Page ###, ABORTED!
FATAL ERROR: Illegal Picture to Picture Relationship For Page ###, ABORTED!
FATAL ERROR: More Than 1 Picture to a Label For Page ###, ABORTED!
FATAL ERROR: More Than 1 Overview To a Close-Up Picture For Page ###, ABORTED!
FATAL ERROR: Picture Dimensions Insufficient to Generate For Page ###, ABORTED!
FATAL ERROR: Internal Coordinates Outside of Pic's Dims For Page ###, ABORTED!
FATAL ERROR: A Reference is Made to a Non-existing Label For Page ###, ABORTED!

APPENDIX D

PLA: PAGE LAYOUT ALGORITHM PICTURE COORDINATES GRID MASTER

The Picture Coordinates Grid is to be used as a master to produce an overlay for the computation of picture dimensions and coordinates. The grid is laid out as an 0.25 inch scale.



PLA: PAGE LAYOUT ALGORITHM
PICTURE COORDINATES GRID

Technical Report 137

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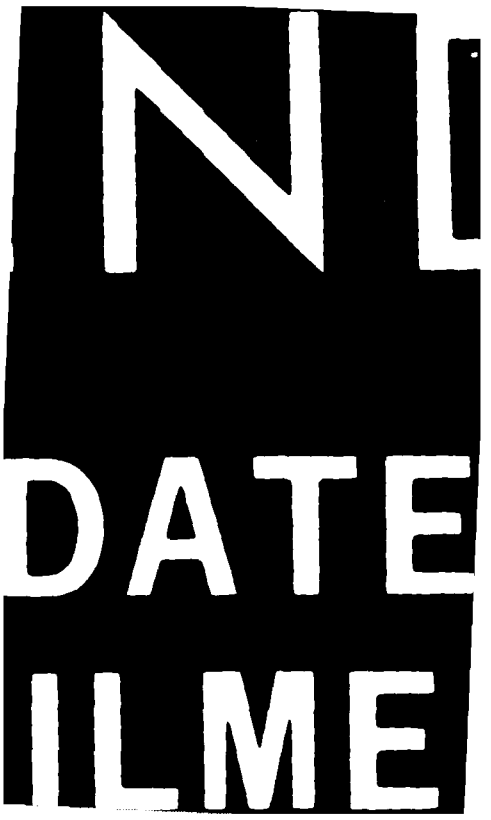
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